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THE TIME FRAMES OF NEW VENTURE TEAMS

By

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B.B.A., Western Michigan University, 2006

M.B.A., Loyola Marymount University, 2010

A Dissertation

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In Partial Fulfillment of the Requirements

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Doctor of Philosophy

in Entrepreneurship

Department of Entrepreneurship

University of Louisville

Louisville, Kentucky

December 2015

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A Dissertation Approved on

December 3, 2015

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DEDICATION

I dedicate this to my family, who has always been there. Time after time.

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I would like to acknowledge several people who helped me complete this dissertation. I owe a tremendous amount of gratitude to my parents, Pearl and Jim for providing me with a life full of opportunity and grounded in discipline. They both sacrificed everything to build a life here in America for my brother Ryan and I and they both continue to inspire me by their lifelong dedication to education and community building in our hometown of Kalamazoo, Michigan.

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ABSTRACT

THE TIME FRAMES OF NEW VENTURE TEAMS

Jason D'Mello

December 3, 2015

The central research question in this dissertation is: how do an individual's perceptions of time impact a new venture team? Specifically, the study examined whether or not temporal depth relates to how reactive entrepreneurs may be to the environmental changes and threats that they face in their new venture team. I interviewed two cofounders from 40 new venture teams. The results suggest that cofounders in the same new venture team have very different perceptions of time. Their agreement, or congruence of temporal depth (future, past, and total) impacts their new venture team's perception regarding environmental hostility. This relationship is negatively moderated by polychronicity (the extent to which people prefer to be engaged in two or more tasks or events at the same time). This study provides early evidence of possible reasons why cofounders may eventually see threats and changes for the same business differently. Results and implications for research are discussed.

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CHAPTER 1 – INTRODUCTION

The narrative of entrepreneurship in society endures as one that romanticizes the entrepreneur as a “lone wolf” hero. This notion persists despite findings (Aldrich, Carter, & Ruef, 2002), which suggest that entrepreneurship is a highly social endeavor in which many new companies are started by two or three people (Kamm, Shuman, Seeger, & Nurick, 1990; Gartner, Shaver, Gatewood, & Katz, 1994; West, 2007; Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013). A recent stream of literature on new venture teams (NVTs) offers a perspective on entrepreneurship that considers the formation of a new venture at the team level. Although fewer than 50 empirical studies have been published on NVTs, this literature indicates that characteristics related to the composition of a new venture team can impact the performance of an organization (Klotz, Hmieleski, Bradley, Busenitz, 2013).

It has been said, “no two people living *at* the same time live *in* the same time” (Jaques 1982, p.3). Time itself is a social construct that is based on human interaction (Lauer, 1981). An individual’s perception of time has an impact on his or her decisions, behavior, and relationships among many other aspects of life (Bluedorn, 2002). Entrepreneurs specialize in “making judgmental decisions about the coordination of scarce resources” (Casson, 1982 p.23). Facing day-to-day decisions concerning which behaviors to adopt, entrepreneurs must make tradeoffs in how they allocate time and attention within their businesses (Gifford 1998). During a single day, an entrepreneur

could be active in direct selling, customer service, training a new employee, reviewing financial statements, pitching an investor or negotiating with a banker, strategic planning for the future, and even fixing a broken coffee machine in the office. Some decisions are made out of choice; others are made out of necessity (or at least based on what an entrepreneur perceives to be essential for survival). Scholars have recently acknowledged that “very little is known about what entrepreneurs do” (Bird, Schjoedt & Baum, 2012, p.903). Even less is known about *why* entrepreneurs do what they do. Turning to the strategic management literature, one possible explanation for why entrepreneurs allocate attention to certain activities and not to others may be related to how they perceive their environment. Perceptions of environmental uncertainty have been found to vary significantly across individuals and to impact the strategic decisions made by an organization (Mitchell, Shepherd, Sharfman 2011).

Dr. Allen Bluedorn’s (2002) research identifies two other temporal factors that may play a role in how entrepreneurs allocate their attention and behave: temporal depth and polychronicity. *Temporal depth* is defined as “temporal distances into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen (Bluedorn 2002, p.114). *Polychronicity* is “the extent to which people (1) prefer to be engaged in two or more tasks or events simultaneously and are actually so engaged and (2) believe their preference is the best way to do things” (Bluedorn 2002, p.51; Hall, 1959).

The central research question in this dissertation is: how do an individual’s perceptions of time impact a new venture team? Specifically, I investigate how temporal differences within a NVT relate to perceptions of environmental hostility and dynamism.

Past studies suggest that as environments become more hostile, managers become more reactive and risk averse (Miles et al., 2010). The *Academy of Management Journal* has published a recent study that revealed that more new product innovations were introduced by CEOs based on a certain perception of time (future, past, present) combined with either a dynamic or stable environment (Nadkarni & Chen, 2014). The purpose of this dissertation is to see if temporal perceptions can factor into how reactive entrepreneurs are to environmental changes and threats within the context of a new venture team.

Motivations Detailed

Surveys and interviews conducted among investors and entrepreneurs have suggested that disagreements/conflicts/fights among co-founders/mentors play a major role in the failure of start-ups (Wasserman 2014). In the popular book, *The Founder's Dilemmas*, Noam Wasserman claims that 65% of startups fail due to problems within the management team (Gorman & Sahlman, 1989). Perhaps it is differences in temporal perceptions and or levels of polychronicity among NVT members that are the main drivers of these conflicts. In this dissertation, I explore temporal factors that may help explain why new venture team members often disagree on where they should focus their attention in the business. Perhaps, an awareness of the primary drivers of such conflict and the communication thereof can help in the assignment of roles within NVTs as they form. This understanding may help alleviate some of the start-up problems experienced within NVTs.

Entrepreneurial Teams

Turning to the entrepreneurship literature, it becomes difficult to find studies that look at dynamics between co-founders in a startup team. Scholars have acknowledged

that entrepreneurship often involves a team of individuals as opposed to “lone wolf” entrepreneurial heroes (Lim, Busenitz, & Chidambaram, 2013; Amason, Shrader, & Tompson, 2006; Beckman, Burton, & O’Reilly, 2007; Ucbasaran, Lockett, Wright, & Westhead, 2003). Studies that have examined technology startups in knowledge intensive sectors suggest that the majority of early-stage ventures are comprised of teams (Schjoedt, Monsen, Pearson, Barnett, & Chrisman, 2013; Gartner, Shaver, Gatewood, & Katz, 1994; Kamm, Shuman, Seeger, & Nurick, 1990; West, 2007). Other datasets, such as the Panel Study of Entrepreneurial Dynamics (PSED) indicate that just over half of small businesses have at least two cofounders (Ruef, Aldrich, Carter, 2003).

Other literatures (i.e. Upper Echelon Theory) can help understand the dynamics between entrepreneurs within a new venture team. However, past studies have also shown that behavioral theories from established organizational settings are not always transferable to entrepreneurial organizations (Bygrave, 1993; Dess, Lumpkin, & McGee, 1999; Zahra, 2007; Dew, Read, Sarasvathy, & Wiltbank, 2008). My first motivation in this dissertation is to uncover the dynamics of co-founding teams during the exploitation process of an opportunity. New venture teams could be formed for a number of reasons, but the literature suggests that two of the main distinct reasons are pragmatic and interpersonal motivations. In other words, some entrepreneurs form teams to fill voids in resources and skill sets in a new venture (pragmatic motivations); whereas, other entrepreneurs form teams because they enjoy working with the other entrepreneurs or share a friendship prior to a venture (interpersonal motivations). In this dissertation, I explore the motivations for team formation. If NVT formation patterns reflect two main types of motivations (pragmatic and interpersonal), I seek to understand how these

motivations are related to how entrepreneurs' perceive time and react to their environment.

Perception of Time

It has been said, "time is a social construction and that values held about time are outcomes determined by human interaction" (Lauer, 1981 p.44). Every group of humans shares the need to coordinate activities, fix dates for the future, remember the past, and estimate the length of time (Malinowski 1990). Grounded by this assumption, my second motivation in this dissertation is to compare perceptions of time, future and past, held by each cofounder within an entrepreneurial team. Temporal dimensions have been found to have significant relationships with several important aspects of human life, including a nation's economic prosperity (Ashkanasy et al. 2004), a firm's performance (Bluedorn and Ferris 2004), per capita gross domestic product and even death rates from coronary heart disease (Levine and Norenzayan 1999).

Bluedorn (2002) was the first to report on an entrepreneur's perceptions of time, describing short-term, medium-term, and long-term temporal depths for the future and past. In addition, the study uncovered significant relationships between an entrepreneur's time horizons with his or her preference for working fast, flexibility, emphasis on deadlines and schedules, punctuality, and general life stress. The study is explicit about its limitations and stakes a claim as a benchmark for future research. Recently, Tumasjan, Welpe & Spörrle (2012) experimented with time using construal level theory to explain inconsistencies in previous research around the desirability and feasibility of opportunities, evaluation, and exploitation. Prior research has not looked at the temporal

distance between the phases of evaluation and exploitation. Time is a construct that is very important in organization research, yet often treated as a boundary condition (George & Jones, 2000). This dissertation continues to explore this stream of research within the context of entrepreneurial teams to better understand the underlying factors that may determine the behaviors of entrepreneurs.

I focus on the construct of time within the context of a new venture team to better understand how individual interpretations of time impact the relative choices that co-founders make regarding how they spend their own time in a business. Integrating time into entrepreneurship may help us understand team-level issues related to differences in how co-founders respond to dynamic environments and market risks faced in a new venture.

Research Question

The main research question of this dissertation is: how do the individual perceptions of time impact a new venture team? I separate this broad research question into two specific research questions by asking:

- 1) What are the consequences of temporal differences between co-founders?*
- 2) How do perceptions of time impact perceptions of the environment by individuals and NVTs?*

These research questions seek to understand how entrepreneurs perceive time. In the case of a new venture founded by a team, how similar or different are these temporal perceptions within the founding team? If there is variation, what is the magnitude of differences of perceptions of time within NVTs and what are the consequences of these differences? Is there a relationship between temporal perceptions and the initial reason

for forming a team? In most entrepreneurship research the sample consists of one entrepreneur per firm. Therefore, this question is difficult to theorize based on past studies in entrepreneurship. Borrowing from other organizational literature is not sufficient to resolve this question. Investigating research questions related to co-founding teams will help us gain a clearer understanding about the finer nuances of entrepreneurial action. I investigate if co-founders perceive environmental threats and uncertainty differently due to subjective differences in time. If co-founders perceive uncertainty in the environment very differently from one another, they may also disagree on how each should allocate his or her attention. I seek to uncover whether temporal perceptions are related to such differences in how entrepreneurs perceive uncertainty within their surrounding environments.

Boundary Conditions: Assumptions and Scope

The main assumption of this dissertation is that the actions of entrepreneurs have consequences for a new venture. Accounting for the nature of the opportunity being exploited by the entrepreneur is outside the scope of this research. I look at a specific stage within the process of entrepreneurship that intends to concentrate on execution. Therefore, alternative explanations for firm performance based on theoretical lenses originating from research on opportunity recognition may contradict this work.

This dissertation focuses on two temporal dimensions – temporal depth and polychronicity. My intention is to build upon Bluedorn's (2002) work, which has made significant contributions to entrepreneurship, while acknowledging its limitations. Therefore, alternative theories on time, even those that emphasize what is known as clock time over the use of event time within this dissertation may bring a different

understanding of issues in entrepreneurship (such as opportunity discovery, evaluation and exploitation, entrepreneurial orientation, motivations, etc.). This dissertation does not aspire to be a comprehensive review of how time can be researched within entrepreneurship. It mainly considers the influence/impact of inter-personal differences in perceptions of time (temporal depth and polychronicity) within the context of new venture teams as opposed to individual entrepreneurs.

Contributions and Implications

Theoretically, the research questions in this dissertation will answer the call of several previous scholars by responding to the need to closely consider temporal constructs in social research. This dissertation will be pioneering in its attempt to investigate the dynamics within a co-founding team and how temporal perceptions impact a new venture. These differences in how time is perceived across a NVT may help us understand disagreements within a team, specifically in how each entrepreneur interprets threats within the environment differently from one another.

In sum, then, this dissertation should provide useful insights for the resolution of the tensions faced by early-stage, resource constrained entrepreneurs, regarding with whom to partner and how to manage a partnership during times of uncertainty. Understanding differences in perceptions of time can help co-founders reconcile differences that may stem from factors unrelated to the business or their relationship.

Organization of Dissertation

The organization of the remaining chapters of this dissertation is as follows. Chapter 2 reviews the literature on new venture teams, perceptions of time, allocation of attention of entrepreneurs, new venture team performance and environmental uncertainty.

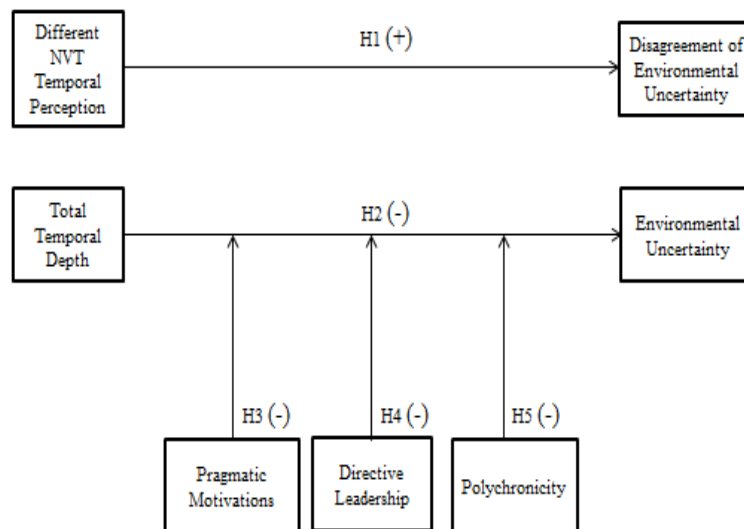
This review will help build theoretically grounded hypotheses related to the research questions described earlier. Theory from prior research will be used to develop inferences regarding significant differences between entrepreneurs' relative perceptions of time. Further, I develop hypotheses related to temporal depths and polychronicity to examine relationships between temporal perceptions and perceptions of environmental uncertainty. Chapter 3 explains the methodological approach for testing the various hypotheses postulated in Chapter 2. This includes specific descriptions of the survey instrument, sample, variables, controls, and the analytical technique for examining the data. Chapter 4 includes the descriptive data, analyses, and results. Chapter 5 discusses the findings of these results, limitations of the study, implications for new venture teams and future direction for building theory around this body of work.

CHAPTER 2 – THEORY AND HYPOTHESES

Chapter Overview

Chapter two reviews literature relevant to the formation and behavior of New Venture Teams (NVTs), organizational research related to time, theories of attention, environmental dynamism, and environmental hostility to formulate hypotheses that can help answer the main research question presented in Chapter 1 - *how do individual perceptions of time impact a new venture team?* The figure below is a visual representation of the constructs and relationships theorized in this chapter. It is intended to serve as a roadmap for how these terms will be introduced throughout the chapter and will be referenced in the following sections of the chapter.

Figure 1. Conceptual model



New Venture Teams

Although a large proportion of new businesses are started by teams, a careful perusal of the literature indicates that fewer than 50 empirical articles have focused on New Venture Teams (NVTs) (Beckman, 2006; Klotz, Hmieleski, Bradley, Busenitz 2013). These studies found that several labels were used interchangeably with new venture teams, including founding teams, entrepreneurial teams, and startup teams to name a few. A few early studies in the 1990's encouraged such team-related research by noting that teams were more common in new business creation than what the literature was emphasizing at the time. (Kamm et al. ,1990; Fiet, Busenitz, Moesel & Barney, 1997;) Ensley et al. (1999) continued the discussion with a more detailed description of entrepreneurial teams. Beckman (2006) found that up to 9 out of 10 high technology startups sampled were formed by a team. This is consistent with samples used in research by Wasserman (2012) in which only 17.5% of technology startups and only 11.7% of life sciences startups were founded by just one entrepreneur. Contrary to this, the PSED sample of small businesses indicates that half of small businesses are founded by just one entrepreneur (Ruef et al. 2003). In the next section I will define new venture teams within the context of this study.

Defining New Venture Teams

Entrepreneurial teams consist of two or more individuals, with a significant financial interest in a business, who participate actively in the development of an enterprise (Cooney 2005). Similarly, *new venture teams* (NVTs) are groups of individuals mainly responsible for making strategic decisions and managing the operations of a new

venture (Klotz, Hmieleski, Bradley, Busenitz, 2013). However, it is important to note that there is no consensus yet regarding a larger definition for entrepreneurship, which in essence characterizes the environment in which these teams operate. Entrepreneurship has been defined as new economic activity (Davidsson, 2004); the creation of new organizations (Gartner, 1988); competitive behavior that drives market process (Kirzner 1973); the creation of a new enterprise (Low & McMillan, 1988); a process of creative destruction (Schumpeter, 1934); the process by which individuals – either on their own or inside organizations – pursue opportunities without regard to the resources they currently control (Stevenson & Jarillo, 1990); and the process of discovery, evaluation and exploitation of opportunities (Shane and Venkataraman, 2000). This list of definitions is not exhaustive, but is meant to show the range of perspectives within the field. I investigate NVTs based on Klotz et al.'s (2013) definition; therefore, reconciling the various definitions of entrepreneurship is beyond the scope of this dissertation. NVTs are therefore considered to be groups of individual entrepreneurs, involved during the exploitation of an opportunity, who are responsible for making strategic decisions and managing the operations of a new venture (Klotz, Hmieleski, Bradley, Busenitz, 2013).

Entrepreneurship provides a unique context for studying teams. Research on top management teams (TMTs) offers a similar definition, yet in a significantly different context as compared to NVTs. The key difference is that TMTs exist in established organizations with clear titles and defined roles across known business activities (Hambrick, Cho & Chen 1996). NVTs operate within the process of creating new organizations: therefore titles, roles, policies, and norms may not have been developed as

of yet (Klotz et al, 2013). In the process of defining those titles, roles, policies and norms, NVTs can shape an organization in ways much different than a TMT can. (Hambrick & Abrahamson, 1995; Nelson, 2003; Ensley et al., 2006; Shane, 2004; Harper 2008; Klotz et al, 2013).

Formation of New Venture Teams

Because this dissertation examines differences in how entrepreneurs within a NVT perceive time and the environment, it is important to consider the original reason a NVT was formed. These motivations to form a team could be related to such differences and other dynamics that a NVT may realize later into a venture. It could also be the case that these differences (or similarities) in perceptions of time and the environment had led to the formation of a team in the first place. Research on the formation of NVTs is limited. Most entrepreneurship research on teams has been conducted on existing teams' interactions and performance (Forbes et al, 2006). Aldrich (2004) also highlighted the difficulty in identifying teams before they are created.

The earliest literature on the formation of NVTs begins with Kamm et al. (1993). In their theoretical model of team-based venture creation, they proposed that a lead entrepreneur or group of entrepreneurs decides to begin the process of venture creation. Soon after this decision is reached, he/she/they interact with a social network for resource and personnel needs. NVTs were also the focus of research related to venture capitalist (VC) relations and team member dismissal, (Fiet et al., (1997); Busenitz, Moesel, Fiet & Barney 1997; Busenitz et al., 2004).). Recently, scholars have discussed the pragmatic and interpersonal motivations for team formation in new ventures. (Aldrich & Kim, 2007;

Forster & Jansen, 2010). Pragmatic reasons involve resource-seeking behaviors that motivate new partnerships; whereas, interpersonal motivations involve social attraction and homophily (Ruef, Aldrich, & Carter 2003; Forbes, Borchert, Zellmer-Bruhn, & Sapienza, 2006; Aldrich et al., 2007; Forster & Jansen, 2010). Past work has suggested that new ventures are initially formed by partners for personal reasons, but later bring in founders for pragmatic motives (Forster & Jansen, 2010). However, it is still uncertain how many NVTs are formed from either pragmatic or interpersonal motivations. It is important to consider why a co-founder is included on a NVT when understanding dynamics among a team later. Therefore, in the conceptual model displayed in Figure 1, pragmatic motivations are proposed as a moderator between temporal and environmental perceptions (see H3). This relationship will be explained later in Chapter Two during the hypotheses development.

Antecedents and Outcomes of New Venture Teams

The section above discussed literature related to why teams form. Other research has examined the relationships between firm level outcomes (i.e. sales, growth, profitability, innovativeness, satisfaction etc.) from individual-level inputs. I will review a selection of this literature that is related to the hypotheses proposed in this dissertation. It should be noted that firm-level outcomes are beyond the scope of this dissertation. However, this review is included to demonstrate the importance of such individual inputs in a NVT.

Among the empirical results from NVT research are several studies that have found relationships with several independent variables including prior knowledge, social capital, team composition, teamwork, human capital, diversity, leadership style, cognition, and network. Early work in the 1990s studied the relationship of joint work experience, team size and heterogeneity of industry experience with firm sales growth (Eisenhardt and Schoonhoven, 1990). In 1995, McGee, Dowling and Megginson sampled 210 high-tech firms and found that teams with more functional experience were more effective in cooperating with other firms to drive growth in sales.

In the early 2000s, cohesion, conflict, and cognition were found to be related to firm performance for a sample of fast-growing private firms (Ensley and Pearce, 2001; Ensley, Pearson and Amason, 2002). The type of leadership style (vertical or shared) was found to predict revenue and employment growth rates (Ensley, Hmieleski, and Pearce, 2006). Mixed results on conflict were clarified by distinguishing affective conflict from cognitive conflict (Higashide and Birley, 2002). In a study of 58 UK- based VCs, cognitive conflict had a positive relationship with firm performance while affective

conflict was negatively related. Other drivers of performance found during this time were team role formalization, functional specialization, and administrative intensity (Sine, Mitsuhashi and Kirsch, 2006). Besides, team prestige was positively linked to higher IPO valuations (Lester, Certo, Dalton, Dalton and Cannella, 2006) and for a sample of 198 post-IPO firms, a fit between team experience and strategy was also found to predict profits and sales growth (Shrader and Siegel, 2007). Other studies evaluated outcomes based on VC evaluations of NVTs, and found that teams with similar characteristics to the VC got better ratings and that teams with high cohesion, industry and leadership experience, and heterogeneous educational backgrounds were favored (Franke, Gruber, Harhoff, and Henkel, 2006; Franke, Gruber, Harhoff, and Henkel, 2008).

Other related research has found that “directive” leaders performed best in dynamic environments while “empowering” leaders were best suited for stable environments (Hmieleski and Ensley, 2007). Vissa and Chacar (2009) report that when considering social network theory, team performance is negatively related to network constraint and positively related to diversity with the impact of team strategic consensus and cohesion moderating the benefits of structural holes. Referring back once again to the conceptual model (Figure 1), a directive leadership style is also considered as a moderator between perceptions of time and the environment within a NVT. Within a NVT, this leadership style is important because it could reflect how decisions are made among members of a founding team. For instance, one co-founder might be trusted with the task of directing the others because of past experience despite having the same level of ownership in the business. Leadership style is therefore a critical variable to consider when examining perceptions of time and the environment within a NVT.

The studies reviewed above mainly focus on performance of new venture teams. However, the present research question seeks to understand the underlying factors that may or may not contribute to performance. Past research suggests that there is a link between some aspects of inter-personal characteristics (such as leadership style, experience, etc.) and conflicts. The literature also suggests that inter-personal characteristics can relate to how people perform in dynamic and stable environments. Scholars have found that team learning was positively related to firm internationalization (Bruneel, Yli-Renko, and Clarysse, 2010). Other studies found that team composition impacts learning (Sardana and Scott – Kemmis, 2010). Perry-Smith and Coff (2011) found that positivity, calmness, and relaxation of a team generate, both, a higher quantity and quality of business ideas (measured by peer ratings on creativity).

Based on a review of NVT literature, motivations for forming a team and the style of leadership within a new venture are thought to be important when examining how similar or different temporal perceptions impact a NVT. Next, I review literature on time within management and entrepreneurship research.

Perception of Time

“There is probably no more important category for cultural analysis than the study of how time is conceived and used in a group or organization” (Schein, 1992 p.114).

Entrepreneurship researchers have been advised to consider the time frames of entrepreneurs for over twenty-five years (Low & MacMillan, 1988; Bluedorn & Martin 2008). Research on time has responded to several complaints about the lack of attention to temporal issues in organization and management literature (Fraser, 1975; Hall, 1983;

Jaques, 1982; Lauer, 1981; McGrath, 1988; McGrath & Kelly, 1986; Whitrow, 1980; Adam, 1990; Schein, 1992; George & Jones, 2000). This dissertation takes the perspective that time should be treated as more than just a boundary condition in entrepreneurship research (George & Jones, 2000). This perspective recognizes that an individual's consciousness is temporally ordered and processing information occurs within the flow of time (Schutz, 1967). *"If activities have no temporal order, they have no order at all"* (Moore, 1963 p.9).

Malinowski (1990) states that *"members of every human group have the need of coordinating various activities, of fixing dates for the future, of placing reminiscences in the past, of gauging the length of bygone periods and of those to come"* (p. 203). Yet, time itself is a social construction based on human interactions (Lauer, 1981). Hall (1983) examined time as an "invisible language" used differently across cultures. Temporal variables have been found to have significant relationships with several important aspects of human life, stress, pace of work, and even coronary heart disease (Ashkanasy et al. 2004; Bluedorn and Ferris 2004; Levine & Norenzayan 1999).

Polychronicity

Organizing time can be done in two ways; coordinating events in sequence (one-at-a-time), or managing several things at once (Hall, 1983). Polychronicity, one of the temporal variables examined in this dissertation, refers to the latter defined earlier as *"the extent to which people (1) prefer to be engaged in two or more tasks or events simultaneously and are actually so engaged and (2) believe their preference is the best way to do things"* (Bluedorn 2002, p.51; Hall, 1959). In this early body of work, this organization of time was proposed to vary based on geography (Bluedorn & Denhardt,

1988). Polychronicity is part of the broad construct of time orientation which has been conceptualized for individual differences across many items such as schedules and deadlines, punctuality, future/past orientations, synchronization and coordination of work with others, work pace, allocation of time, intra-organizational time boundaries, autonomy of time use, variety vs. routine and quality vs. speed (Schriber & Gutek, 1987). Polychronicity is the third moderator presented in the conceptual model in this dissertation in Figure 1 (H5). In the model, polychronicity is theorized to impact the relationship between temporal depth and environmental uncertainty.

Research has shown that people have different preferences for the number of activities in which they wish to engage at a given moment. Bluedorn, Kaufman and Lane (1992) describe how polychronicity could be demonstrated through a person attempting to do multiple tasks simultaneously (e.g., talking on the phone while driving) or rapidly switching between different tasks (e.g., eating dinner, answering a phone call and later returning to dinner). This preference is a construct that has been studied at the societal, organizational, group, and individual level of analysis. It is a construct distinct from *multitasking*, which refers to a person's actual behavior rather than a preference. It can be thought of as a "non-cognitive variable reflecting an individual's preference for shifting attention among ongoing tasks rather than focusing on one task until completion and then switching to another" (Poposki & Oswald, 2010, p.250).

Polychronicity is a continuous temporal variable (Bluedorn, Kaufman & Lane. 1992). It was first considered in the 1950's to investigate differences among cultural values (Hall, 1959). The concept of polychronicity does not suggest that higher

polychronicity means someone is more effective. It is instead a preference for engaging in multiple tasks and not an interpretation that more is accomplished.

Relationships to Polychronicity

Past studies have found several relationships to polychronicity. Research that attempted to explain cultural differences found that differences in the perception of time use impact work behavior (Hall, 1959). Bluedorn (2002) proposed that this cultural norm has impacted military strategy throughout history influencing leaders to choose between sequential attacks and multiple ongoing battles. Next, I review empirical studies of polychronicity at a cultural level.

Some cultures prefer a more linear approach to organizing activities. These monochronic cultures have been described as being task focused, governed by schedules and plans, and valuing the promptness and privacy of others (Hall & Hall, 1990). Polychronic cultures, on the other hand, have been found to be more spontaneous, relationship oriented, and with liberal lending behaviors (Hall & Hall, 1990). For example, in Bluedorn (2002) military strategy is proposed to be reflective of polychronicity, specifically with the decision to engage in multiple battles at the same time or fighting them sequentially.

Within organizations, time orientation has been linked to internal communications and expectations within the workplace (Schein, 1990). Polychronic organizational cultures are organic, fluid and flexible, and noted by a wider flow of information and communication (Onken, 1999). Several researchers have also found that polychronicity is related to organizational commitment, job satisfaction and job fit (Slocombe & Bluedorn, 1999; Arndt et al., 2006; Conte, Rizzuto, & Steiner, 1999). In his

review of the literature, Bluedorn (2002) indicated several correlates of polychronicity. High polychronicity is positively related to extraversion, favorable inclination towards change, tolerance of ambiguity, formal education, striving for achievement, impatience and irritability, frequency of lateness and absenteeism. It is negatively related to conscientiousness and stress (in some situations, and in those situations it can be argued that there is a mediating relationship between polychronicity, stress and job satisfaction).

At the individual level, polychronicity has been described as a trait-like property that is consistent and habitual (Conte, Rizzuto, & Steiner, 1999). Polychronicity can be thought of as a trait-like construct as opposed to a state-based construct (impacted by contextual factors). In past studies, responders have readily and easily completed psychometric instruments that measure polychronicity consistently across time (Kaufman, Lane, & Lindquist, 1991; Bluedorn 2002). In addition, related studies have provided evidence that polychronicity is a trait-like construct by showing consistent ratings of polychronicity scores between self reports and reports given by the same individual's friends (Conte et al., 1999). This suggests that polychronicity is a chronic measure that should stay relatively stable over time. Next, I review studies that measure performance outcomes as related to polychronicity.

Polychronicity and Performance

Extant research indicates that polychronicity is positively related to several outcomes, such as small group decision making (Weingart, Bennett, & Brett, 1993), decision speed (Judge & Miller, 1991) and higher productivity (Taylor et al., 1984). Job satisfaction, an outcome of stress, is negatively related to high polychronicity (Hecht &

Allen, 2005). Onken (1999) found positive correlations between polychronicity and return on sales and return on assets, though only 20 companies were sampled in the study.

However, not all outcomes have been found to be positive. Some scholars have suggested that high polychronicity can also lead to distracting behavior. Bluedorn (2002) warns against overgeneralizing the positive outcomes related to high polychronicity. Qualitative research by Eisenhardt (1989) investigated the impacts of escalation of commitment on decision-making (Staw, 1981; Bluedorn 2002). The research indicates that less successful companies found difficulty adjusting to changing conditions because of a strict planning process approach, interpreted by Bluedorn (2002) as representing a monochronic approach to management. The companies followed plans very strictly, including the sequences of a project. The opposite approach (i.e. polychronicity) reduced the likelihood of escalation of commitment while speeding up decision-making (Eisenhardt 1989). However, studies have also shown problems associated with polychronic strategies, described by Bluedorn (2002) as “unproductive dithering.” Predicting performance is likely dependent on contextual factors, such as the specific tasks involved, the nature of the job, and other environmental demands for multitasking (König & Waller, 2010).

Bluedorn (2002) also discussed congruency between an individual’s preference and the nature of a task. Within highly polychronic jobs, individual polychronicity predicts both objective and subjective performance criteria including the perceptual speed and accuracy of employees (Kantrowitz & Kinney, 2009; Kantrowitz et al 2012). University professors, arguably working in a polychronic job, have also been shown to

have higher productivity (quantitatively and qualitatively) as a result of higher polychronicity (Taylor et al., 1984).

Souitaris and Maestro (2010) found among a sample of 197 British companies that team polychronicity positively affects firm performance through speed and comprehensiveness mediators. The study specifically looked at strategic decision speed and strategic decision comprehensiveness (Eisenhardt, 1989; Fredrickson, 1984; Forbes 2007; Souitaris & Maestro, 2010). The sample in the study includes new technology ventures. Integrating upper echelons theory, the authors justify a group-level use of polychronicity by assuming homophily among the team members because they are self-selected groups with similar values and beliefs with a strong team culture (Souitaris & Maestro, 2010). However, as described in the NVT section previously, entrepreneurial teams also form based on the necessity of resources. Therefore, it could be the case that there were fewer shared values and beliefs within the team than the authors assumed. Also, there is a questionable inclusion of firms that may not be generally considered as new ventures. The study includes firms that are up to 8 years in age (though the findings are the same for firms up to 6 years in age based on robustness checks). A team-level measure of polychronicity within this sample lays a foundation for future research, such as this dissertation, to examine the impacts of polychronicity within a group of entrepreneurs working on the same venture.

In sum then, higher polychronicity has a positive influence on decision-making speed, flexibility within management teams, commitment to the task, profitability, and ability to adapt to changing conditions. However, it is negatively related to stress and can lead to unproductive dithering. Since NVTs are formed based on varying motivations i.e.

for pragmatic versus inter-personal reasons, it is possible that there are varying levels of polychronicity among the various team members. Moreover, since new firms operate in environments that can be highly dynamic and often pretty hostile or challenging, I seek to investigate how individual differences or similarities in polychronicity and attitudes towards time usage effect the functioning of NVTs.

In the next section, I review literature related to temporal depth so as to understand how interpretations of past and future distances in time may impact entrepreneurial attention. Temporal depth is the independent variable in the conceptual model shown in Figure 1 (see H2). Literature related to time has offered an understanding on the subjectivity of how people interpret events in the past, present and future. This dissertation examines how this perception impacts how an entrepreneur may perceive environmental threats and dynamism. This is described in more detail in the hypotheses development following the review on temporal depth.

Temporal Depth

Mental processes guide human action (Bandura, 1986; Bandura; 1997; Locke & Latham, 1990; Mischel & Shoda, 1995; Pervin, 1994; Shane & Delmar, 2004). Social psychologists have demonstrated that a set period of time is experienced differently by people with varying stimulation levels and as one gets older (Doob, 1971; McKenzie, 1997; Ornstein, 1969). Fungible time, otherwise known as clock-time, objective time or absolute time is measured in our society through seconds, minutes, hours, days and other units. Epochal time, on the other hand, is defined by events (Bluedorn, 2002). Research

has shown that mental processes for recalling the past shape how people perceive the future (Lewin, 1935; 1943; Schutz, 1967; Karniol & Ross, 1996; George & Jones, 2000; Bluedorn, 2002).

Research has provided evidence that entrepreneurs are impacted by their temporal depth, defined as “temporal distances into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen” (Bluedorn, 2002 pg. 114). Indeed, there is a relationship between an individual’s past temporal depth and his/her future temporal depth. Temporal depth measures include short-term, medium-term, and long-term distances into the future and the past.

Temporal Depth in Entrepreneurship

Temporal distance is similar to temporal depth, but is considered an objective time length independent of an individual’s perception. Temporal depth can be understood as how an individual calibrates temporal distances (Tumasjan, Welpe, Spörrle, 2012). Temporal distance impacts how entrepreneurs evaluate and exploit opportunities (Tumasjan et al. 2012). Using experiments, construal level theory explains that there is a higher desirability of an opportunity being evaluated when the exploitation phase is temporally distant, but higher feasibility when the exploitation phase is temporally near (Tumasjan et al. 2012). This was the first study that incorporated temporal distance into entrepreneurial cognition research. Another variable that has been used in entrepreneurship research is temporal orientation. *Temporal orientation* is an individual’s focus on the future, present, or past, and is likely a trait-like construct (Shipp,

Edwards, & Lambert, 2009). Similarly, *temporal tension* is a link between the present with future events that have yet to manifest themselves (Bird, 1988).

Temporal depth is arguably a broader concept than the other temporal aspects described above because it involves both directions of time, and distances in terms of time units, while accounting for individual perceptions of time. Since this dissertation is taking a subjective perspective on the construction of time and its role within society, temporal depth is deemed to be the appropriate construct to measure time horizons. Time is frequently associated with attention in common conversation.

In the next section, I discuss research related to the allocation of attention of entrepreneurs. The two main constructs in time discussed above are polychronicity and temporal depth. In the conceptual model in Figure 1, I propose an interaction between the two temporal variables on the impact on an entrepreneur's perception of the environment. I argue that temporal depth and polychronicity are temporal factors that impact this attention in different ways in an NVT.

Attention and Behavior

"My favorite metaphor of the business owner is the man on "The Ed Sullivan Show" who balanced spinning dinner plates on the ends of tall sticks. Just as he had fifteen spinning, one would start to wobble and then another and then another" (Ainita F. Battina, Inc. May, 1993).

Dr. Sharon Gifford's theory on the allocation of limited entrepreneurial attention presents a mathematical model to consider how entrepreneurs choose which activities to engage in as they face constraints of limitations of time and resources. Research has shown little consensus on the question of what entrepreneurs do (Reynolds & Miller,

1992). In this section, I will review related literature that considers such limitations within economics and organization theory.

Attention in an Organizational Context

Prior to Gifford (1998), organization theory had an established stream of literature related to the concept of limited attention called “span of control.” Span of control was important for organizational research because it was said that the role of the organization was to focus the attention of workers because they have a limited capacity to process information and make decisions, and only do a few things at any given time (Barnard, 1938; March & Simon, 1958; Gifford 1998).

The attention-based view of the firm is a perspective that argues that firm behavior is the result of the channeling and the distribution of the attention of the decision-makers within a firm (Ocasio 1997). There are three main principles in this view, 1) focus of attention, 2) situation of attention and 3) structural distribution of attention. In sum, a firm has rules, resources, and social relationships that place decision makers in certain contexts, settings or situations. A decision-maker depends on firm rules, resources, and social relationships for any given decision. These situations impact where the decision maker focuses his or her attention, and lead to specific types of behavior. The environment poses further constraints on an individual’s selective attention within a situational context (Ocasio, 1997). In other words, environments are far too complex for firms to attend to each issue. Decision makers are restricted in the set of issues they consider in a situation. This view suggests a link between attention and firm behavior that is critical for the purposes of this dissertation, which investigates similar relationships at different levels of analyses. It is also the main reason for the inclusion of

market risk and environment hostility in this study. Specifically, because attention is related to changing environments could it be that the sensitivity to such changes varies by the individual, specifically based on his or her temporal perceptions?

Recently, The Academy of Management Journal published a study that investigated the interaction of CEOs' perceptions of time (temporal focus of past, present, future) with environmental dynamism to predict a company's rate of new product introduction (Nadkarni & Chen, 2014). The study provides empirical evidence that CEO attention biases (based on perception of time) shape key behavior in a firm. The study found that CEOs vary in the degree to which they devote attention to the past, present and future time frames. The variation in temporal focus interacted with environmental dynamism (stable vs dynamic environment) in relation to new product introduction.

In the following section, I integrate the previous literature review to develop 5 hypotheses. In this literature review, I discussed research related to how teams are formed and led. Motivations to form a team appear to be based on either pragmatic or interpersonal reasons. These teams utilize various leadership styles and studies have shown that these styles may work better or worse in certain types of environments. For example, "directive" leaders performed best in dynamic environments while "empowering" leaders were best suited for stable environments (Hmieleski and Ensley, 2007). Two temporal constructs, polychronicity and temporal depth were introduced to describe possible subjective interpretations of distances in the past and future among NVTs (temporal depth). These perceptions may impact other perceptions related to the environment. Further, entrepreneurs vary in how many tasks they prefer to be engaged in

at a given moment (polychronicity). Next, I introduce environmental uncertainty (presented in Figure 1. as the dependent variable in the conceptual model).

Hypotheses Development

In the attention-based view of the firm, environments pose a constraint on an individual's selective attention within a situational context (Ocasio, 1997). Strategic management research has sought to understand the effect of this environmental context on how managers make decisions (Duncan, 1972; Milliken, 1987). A manager's perception of his or her environment, specifically as related to environmental dynamism and environmental hostility relates to erratic or systematic decision-making (Mitchell, Shepherd, Sharfman, 2011). Assuming that entrepreneurs vary in the degree to which they perceive changes and threats in the environment, these perceptions may lead to disagreements in how attention should be allocated by a NVT. Further, disagreements on such strategic decisions may lead to conflict. Are these differences due to the reason why the team was formed, how the team is lead, and how individuals within the NVT perceive time differently from one another?

In the recent study mentioned in Chapter 1, Nadkarni & Chen's (2014) framework suggests that attention biases (based on perception of time) shape key behavior in a firm. The study found that CEOs vary in the degree of attention that they devote to past, present and future time frames. The variation in temporal focus interacted with environmental dynamism (stable vs dynamic environment) to impact the number of new product introductions (NPIs). Past temporal focus had a positive impact on NPIs in stable environments, while present and future temporal focus had a positive impact on NPIs in

dynamic environments. Negative effects were found for past and future focus in dynamic and stable environments, respectively.

The results of the above study suggest that there is a relationship between temporal perceptions and the environment. Environments change because of forces beyond the control of a business (Aldrich, 1979; Baum & Wally, 2003; Dess & Beard, 1984). *Environmental dynamism* is the rate and unpredictability of change in environmental variables (Dess & Beard, 1984; Simerly & Li, 2000; Wang & Li, 2008). *Environmental hostility* is the environment outside the control of an entrepreneur that presents conditions unfavorable to a new venture (Miles et al., 2011). These environmental conditions require increases in attention from the CEO (Baum & Wally, 2003). Assuming that environmental uncertainty is a perceptual phenomenon (Child, 1972; Downey & Slocum, 1975; Starbuck, 1976), entrepreneurs' reactions to environmental dynamism and environmental hostility may vary considerably. Some individuals may be more sensitive to such changes and place more attention on issues within the environment that seem to be opportunities or threats. Tumasjan et al., (2012) examined how temporal perceptions related to the desirability and feasibility of opportunities. I continue to examine how NVTs' perceptions of time impact their perception of the environment, assuming the possibility of heterogeneity in both constructs within the same NVT. Next, I discuss the similarities and differences of *temporal depth* and *temporal focus*. This is important because I infer from logic based on Nadkarni & Chen's (2014) study to develop my hypotheses, however, there are distinctions that need to be made between the two variables.

Temporal depth is related to temporal focus in that they are both subjective interpretations of time. *Temporal focus* is defined as “the extent to which people characteristically devote their attention to perceptions of the past, present and future” (Shipp, Edwards, & Lambert, 2009: 1). *Temporal depth* is defined as “temporal distances into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen (Bluedorn 2002, p.114).

Temporal depth is different than temporal focus because it measures perceived distances of time in the past and in the future instead of attention placed in each of the three time categories (past, present, future). For example, high future temporal depth could mean that when an individual defines the long-term future, he or she may consider events 30 years away. An individual with low future temporal depth may define an event only 3 years away as long-term for the future.

Entrepreneurs perceive and manage time differently (Bluedorn 2002). Nadkarni & Chen (2014) found that a strong past focus has positive effects in stable environments and negative effects in dynamic ones. This is because of the fact that when an environment is stable, rates of technological, market and competitive changes are slow and past experiences and knowledge are more durable and have less risk of becoming obsolete (Atuahene-Gima & Li, 2004;). In my study, I am looking to see how temporal perceptions impact the ways in which entrepreneurs perceive threats in their environment. Bluedorn and Ferris (2004) found a negative correlation between environmental dynamism and total temporal depth. This relationship is consistent with Nadkarni &

Chen (2014). The longer the distance of time assigned to an event, future or past, the more dynamic is the environment as perceived by the entrepreneur.

Variations in perceptions of time (temporal depth and polychronicity) between cofounders should increase their disagreement on perceptions of the environment. Within a team setting, conflict, and team cohesion have been theorized as processes and emergent state mediator variables that can help explain outcomes of NVTs (Markus, Mathieu, & Zaccaro, 2001). Conflict (cognitive and affective) is the most commonly studied process in research related to teams. Affective conflict refers to disagreements emanating from interpersonal differences; cognitive conflict is caused by a task that members disagree about (Jehn, 1997). The two types of conflict have been found to have opposing performance outcomes for NVTs. Cognitive conflict is positively related to profit, sales, and growth, while affective conflict is negatively related to all three (Ensley & Pearce, 2001). Cognitive conflict has also been found to facilitate strategic decision making within the group (Vanaelst, Clarysse, Wright, Lockett, Moray, and S'Jegers, 2006). NVT cohesion or the extent to which team members are attracted to one another and committed to the teams' tasks negatively relates to affective conflict and positively relates to cognitive conflict (Ensley and Pearce, 2001).

Inferring from theory related to conflict and cohesion, if temporal differences among entrepreneurs decrease NVT cohesion, cognitive conflict should increase, leading to more differences in the perception of environmental uncertainty. For instance, if one business partner has a very low past and future temporal depth while the other has a very high temporal depth, each may view the dynamism and hostility of his or her environment very differently from one another. The profile of the entrepreneur with low

temporal depth (future and past) will be similar to the profile of the “low past focus/high present focus/low future focus” executive from Nadkarni & Chen (2014), and based on their framework, this type of entrepreneur would be predicted to perceive more dynamism and hostility in the environment. His or her business partner with high temporal depth would view, both, the past and future in terms of larger distances of time. Such a perspective would reduce his or her sensitivity to environmental changes or threats. Therefore, in this situation the two entrepreneurs working together on a new venture may have very different perceptions of the environment which they are operating within.

H1: Differences in temporal perceptions within a NVT will lead to more disagreements in the perception of environmental uncertainty among the members of the NVT.

The second hypothesis rests on the assumption from Bluedorn and Ferris (2004) that total temporal depth is negatively related to environmental dynamism. NVTs with longer past temporal depths should be less sensitive to changes in the market, technology or competition and perceive the environment to be more stable and less hostile than NVTs that have shorter temporal depths. Nadkarni & Chen (2014) indicated that the interaction between a CEO with a strong past focus and high environmental dynamism has the opposite result vis-à-vis the interaction between one with a strong future focus and high environmental dynamism. CEOs with high future focus performed better in dynamic environments than they did in stable ones. A clear distinction between temporal depth and temporal focus is important for conceptualizing the nature of the overall environmental condition. In the case of a CEO with a high future focus, dynamic

environments were reasoned to improve performance because technology and market information were less valuable in rapidly changing environments than stable ones. CEOs had to probe into the future to be innovative and perceive future demands through imagination (Nadkarni & Chen, 2014; Gibson et al., 2007). The distance into the future for this temporal perception is different than the conceptual definition of long future temporal depth. CEOs in dynamic environments that had high numbers of new product introductions were more future-focused than present- or past-focused, but were likely to be very low in future temporal depth, i.e. thinking about demands in a relatively short-term future. Therefore, in H2, I reason that the higher the temporal depth of a NVT, the less sensitive they will be to immediate concerns than if they had a lower temporal depth. When the NVT has a high temporal depth, immediate environmental changes and threats should be less of a concern since their temporal lens is considering events much further out into the future.

H2: The total temporal depth of a NVT will be negatively related to perceptions of environmental uncertainty.

Similar to hypothesis 1, I investigate dynamics within a NVT, assuming the prevalence of disagreements among cofounders in how they perceive time and the environment. Hypothesis 1 infers that the more different the temporal depths among members of a NVT, the less they will agree on environmental uncertainty. Next, I consider what happens when temporal depths among members of an NVT are completely opposite from one another. For instance, if one entrepreneur has a low past and low future temporal depth; where as another entrepreneur has a high future and high past temporal depth, how will this contrast impact the perception of environmental dynamism

and environmental hostility? Does having at least one cofounder with a high total temporal depth have an impact on how the NVT perceives the environment? It could be the case that the NVT was formed deliberately to have one experienced entrepreneur paired with a nascent entrepreneur. The power dynamics among the NVT may not be even, with less experienced entrepreneurs following the advice and leadership of the experienced ones.

As mentioned earlier, Bluedorn & Ferris (2004) found a positive correlation between past temporal depths and future temporal depths. Therefore in hypothesis 3, I investigate the motivations of why an NVT was formed, restricting the motivations to being either interpersonal (homophily and social attraction) or pragmatic in nature. As discussed in the previous section, NVTs formed from pragmatic motivations are more likely to have defined roles (Aldrich & Kim, 2007; Forster & Jansen, 2010). Within the context of the NVT, this may allow for one cofounder to take on a more directive leadership style as opposed to an empowering style. Directive leaders have been found to perform best in dynamic environments while empowering leaders are best suited for stable environments (Hmieleski and Ensley, 2007). Therefore, NVTs formed from pragmatic motivations, where roles are clearly defined and one entrepreneur has taken a directive leadership role, will more likely perceive greater uncertainty in the environment. In this scenario, with a dominant leader with specific roles, disagreements of temporal perceptions within the NVT will have less of an impact on the perception of uncertainty in the environment.

H3: NVTs formed from pragmatic motivations will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

H4: NVTs with a directive leader (as opposed to an empowering leader) will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

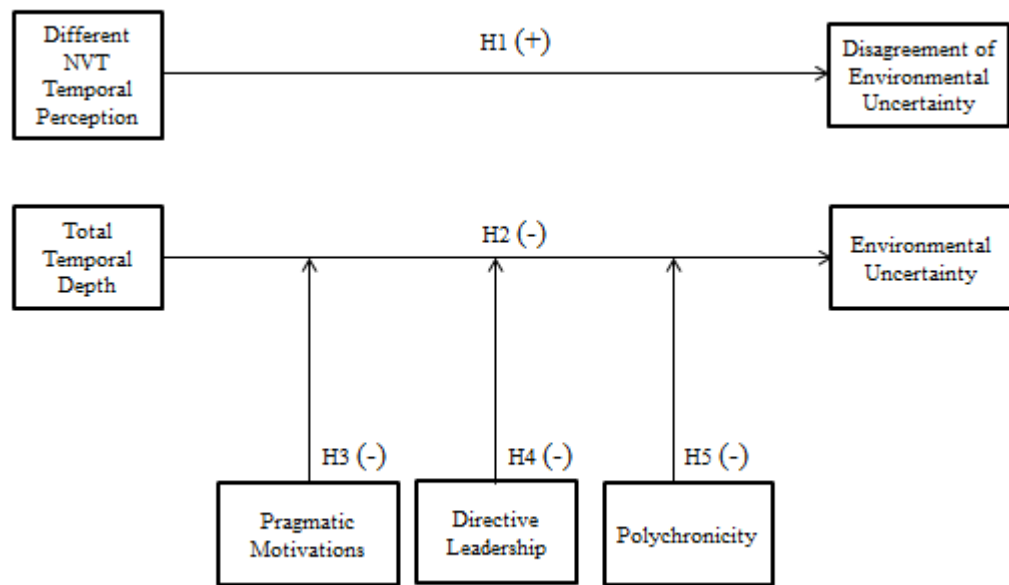
Unlike the operationalization of temporal focus, temporal depth does not include a category for the present. Polychronicity is a construct related to preferences for tasks that take place in the present. It is defined as the preference one has for engaging in multiple tasks at a given time. Polychronic organizational cultures are organic, fluid and flexible, and noted by a wider flow of information and communication (Onken, 1999). There is a positive relationship between polychronicity and the outcomes of small-group decision-making (Weingart, Bennett, & Brett, 1993), decision speed (Judge & Miller, 1991). polychronicity) and reduced likelihood of escalation of commitment (Eisenhardt 1989). Literature suggests that high polychronicity is strongly associated with actions that take place as a result of focusing on the present time as opposed to the past or the future.

Consistent with Nadkarini & Chen's (2014) study, I infer that high polychronicity reflects an entrepreneur having high focus in the present moment, positively impacting his or perception of environmental uncertainty. If an entrepreneur or NVT has high temporal depth, I predicted that they will have low perceptions of environmental hostility and dynamism in previous hypotheses. However, high polychronicity indicates that the

entrepreneur is engaged in multiple activities in the present time, and is less focused on events in the past or future. With higher decision speed and lower risk of escalation of commitment, these entrepreneurs with high polychronicity should have a stronger perception of environmental uncertainty. Therefore, polychronicity may interact with temporal depth. Based on the line of reasoning above, I infer from theory from Nadkarni & Chen's (2014) framework that high polychronicity will negatively moderate the relationship between temporal depth and perception of the environment. In other words, entrepreneurs with longer temporal depth (past or future) will be more sensitive to changes, threats and opportunities in the environment if they have high polychronicity and vice-versa.

H5: Polychronicity will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

Figure 2. Conceptual Model



Hypotheses:

H1: Differences in temporal perceptions within a NVT will lead to more disagreements in the perception of environmental uncertainty among the members of the NVT.

H2: The total temporal depth of a NVT will be negatively related to perceptions of environmental uncertainty by the NVT.

H3: NVTs formed from pragmatic motivations will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

H4: NVTs directive leader (as opposed to an empowering leader) will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

H5: Polychronicity will negatively moderate the relationship between temporal depth and the perceptions of environmental uncertainty perceived by the NVT

CHAPTER 3 – RESEARCH DESIGN AND METHODS

Chapter Overview

The conceptual model presented in Chapter 2 involves constructs at the individual, group, and firm level. This dissertation employs well-established measures used in previous research. The challenge of the dissertation will be the recruitment of a sufficient sample that involves participation of all co-founders in the NVT. This is necessary for testing relationships between motivations, perceptions of time and environmental uncertainty. This chapter will discuss the sample, methodology, measures, and data analysis for empirical testing of the conceptual model.

Sample

For the methodology to match the motivation to contribute to theory, data had to be collected from multiple co-founders in a start-up company. This dissertation required a large target population to recruit responses so that such an effort would result in a sufficient sample size for an empirical study. I leveraged existing and new relationships with incubator and accelerator programs, co-working spaces, and other government and community support systems for entrepreneurs across the United States to identify early-stage entrepreneurs for this dissertation. Early-stage entrepreneurs were included if the NVT had been together for less than seven years. The NVT was also required to have at least 2 cofounders that fit the definition “*individuals mainly responsible for making strategic decisions and managing the operations of a new venture*” (Klotz, Hmieleski,

Bradley, Busenitz, 2013). To calculate statistical power required, previous scholars have recommended at least 5 observations per variable in the model (Hair, Anderson, Tatham, & Black, 1998; Long 1997). Therefore, to meet the minimal power requirements for a study that includes 7 variables, at least 35 observations are needed.

Pilot Study

Prior to collecting data, I tested the survey instrument in a small pilot study with 6 companies and 8 entrepreneurs from Louisville, KY. The study used mixed methods, including qualitative questions, to test the survey instrument and to ensure that questions were being understood clearly by the entrepreneurs. The purpose of the pilot study was also to ensure variation for both temporal and environmental perceptions between cofounders within the same NVT. Finally, the pilot study aimed to gauge the length of time it might take to interview each cofounder. After conducting the pilot study, a few minor grammatical edits were made to the survey instrument. For each case in the pilot there was sufficient variation across temporal and environmental perceptions (in one case, 17 years difference between cofounders on the same NVT).

Methodological Design

I administered the survey using in-person interviews, after which I entered the data on-line using Qualtrics. All variables described below were measured using established scales. I designed the survey in accordance with Dillman's (2000) tailored

design method, which calls for (1) a questionnaire with well-designed content; (2) a survey questionnaire formatted in accordance with the latest advances in cognitive research; and (3) multiple personalized contacts, with each contact accompanied by a carefully crafted message to encourage the respondent to complete the online survey questionnaire. Prior to distributing the survey, I pilot tested it with a small group of entrepreneurs. I used the pilot for the feedback needed to modify the content and timing of the instrument. I present this pilot test and other analyses in Chapter 4.

Variables

New Venture Team

Homophily theory posits that entrepreneurs prefer to work with others who are similar in age, gender, personality and other attributes. To determine if the motivation to start a team is pragmatic or interpersonal, the survey asks open ended questions related to the new venture team.

1. Describe the reasons you decided to start a new venture with your business partners.
2. From a scale of 1 – 7 (very different) rate the following in comparison with your business partners: (experience, skillset, expertise, education, interests, hobbies, access to funding, size of social network, important contacts, family lifestyle, values, religious beliefs, goals, managerial skills, marketing skills, operations skills,)

Founder team measures used by Wasserman (2012)

3. For each founder:
 - a. Prior experience (have you previously founded another company, years of work experience, prior management experience)

- b. Who's idea was it to begin the venture
 - c. Initial position within the company
 - d. Were you full time for the startup when it was founded
 - e. How much capital did you contribute
 - f. Percentage of equity owned
 - g. Are you currently employed by the startup?
4. Prior relationship with the founding team: Before founding this company, did you
- i. previously work together with another founder
 - ii. founded a company together with another founder
 - iii. were friends but not coworkers with another founder
 - iv. related (family) to another founder
5. Performance – revenue, profitable, headcount, monthly burnrate, cash on hand, funding raised

Temporal Depth

Temporal Depth Index (TDI) is a 6-item scale developed by Bluedorn (2002).

Each item asks the following question for perceptions regarding long-term future/past, mid-term future/past, and short-term future/past:

When I think about the (long-term/mid-term/short-term past/future) I usually think about things this far ahead_____.

Each item has fifteen choices of temporal distances ranging from “one day” to “more than twenty five years.”

- 1. One day
- 2. One week
- 3. Two weeks
- 4. One month
- 5. Three months
- 6. Six months
- 7. Nine months

8. One year
9. Three years
10. Five years
11. Ten years
12. Fifteen years
13. Twenty years
14. Twenty-five years
15. More than twenty-five years (please write the specific number of years)

I averaged this measure among the NVT members to compute the construct at the group level of analysis for hypothesis 1 for both temporal perceptions and environmental uncertainty perceptions. Then, I analyzed the measure within a NVT to calculate agreement between co-founders using the standard deviation measure for a within group agreement variable. A review of the literature suggests that several options are available for such a congruence measure. A Klein et al (2001) *Journal of Applied Psychology* study on within-group agreement suggests using the standard deviations between cofounders within the same group when calculating a congruence variable. For multi-item scale measures, the first step is to calculate the SD of each item and then composite the total score for the variable.

Polychronicity

Several scales have been established to measure polychronicity. The most common ones found while reviewing the literature are Polychronic Attitude Index (PAI), Inventory of Polychronic Values (IPV), Polychronic-Monochronic Tendency Scale (PMTS), and the Multitasking Preference Inventory (MPI). Polychronicity is defined as a multi-dimensional construct that includes mental processes (Persing, 1999). Bluedorn, Kalliath, Strube, and Martin (1999) developed and validated the IPV measurement scale. Oberlander (2008) found these measures to be highly correlated despite being based on different conceptualizations of the definition of polychronicity. Because I adopt Bluedorn's (2002) definition of polychronicity that has already been applied to entrepreneurship research, I use this same measurement scale (IPV) to maintain consistency.

This study draws on theory from Bluedorn et al., (1999) and will therefore use the Inventory of Polychronic Values (IPV) - a 10-item measure developed by Bluedorn et al. (1999). Items are scored on a 7-point Likert scale with the following response options; 1: Strongly disagree; 2: Moderately disagree, 3: Slightly disagree, 4: Neither agree nor disagree, 5: Slightly agree, 6: Moderately agree, and 7: Strongly agree. The 10 items are as follows:

1. I like to juggle several activities at the same time.
2. I would rather complete an entire project every day than complete parts of several projects.
3. I believe people should try to do many things at once.
4. When I work by myself, I usually work on one project at a time.

5. I prefer to do one thing at a time.
6. I believe people do their best work when they have many tasks to complete.
7. I believe it is best to complete one task before beginning another.
8. I believe it is best for people to be given several tasks and assignments to perform
9. I seldom like to work on more than a single task or assignment at the same time.
10. I would rather complete parts of several projects every day than complete an entire project.

NVT Polychronicity and ***Polychronicity Agreement*** are calculated based on the measure above. I start by collecting individual polychronicity scores from both NVT members. NVT Polychronicity is an average score for the NVT, and I calculate the standard deviation of the score for a congruence measure used for polychronicity agreement (Klein et al., 2001)

Environmental Uncertainty (Mitchell, Shepherd, Sharfman 2011)

Environmental hostility items (see Green *et al.*, 2008: 378; Slevin and Covin, 1997: 205–206)

1. The failure rate of firms in my industry is high.
2. My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
3. Competitive intensity is high in my industry.
4. Customer loyalty is low in my industry.
5. Severe price wars are characteristic of my industry.
6. Low profit margins are characteristic of my industry.

Environmental dynamism items (see Green *et al.*, 2008: 378–379; Miller and Friesen, 1982: 17–18)

1. My business unit must rarely change its marketing practices to keep up with competitors.
2. The rate at which products are becoming obsolete in my industry is very slow.
3. Actions of competitors are quite easy to predict.
4. The set of competitors in my industry has remained relatively constant over the last 3 years.
5. Product demand is easy to forecast.
6. Customer requirements/preferences are easy to forecast.

Leadership Behavior (Pearce et al. 2001)

*The scales below were adapted to represent a cofounder context. Replacing “team leader” with “cofounder.”

Directive Leadership

Assigned goals

1. My team leader (members) establishes (establish) my performance goals.
2. My team leader (members) sets (set) the goals for my performance.
3. My team leader (members) establishes (establish) the goals for my work.

Instruction and command

1. When it comes to my work, my team leader (members) gives (give) me instructions on how to carry it out.
2. My team leader (members) gives (give) me instructions about how to do my work.
3. My team leader (members) provides (provide) commands in regard to my work.

Empowering Leadership

Encourage self-reward

1. My team leader (members) encourages (encourage) me to treat myself to something I enjoy when I do a task especially well.
2. My team leader (members) urges (urge) me to reward myself with something I like when I have successfully completed a major task.
3. My team leader (members) encourages (encourage) me to give myself a pat on the back when I meet a new challenge.

Encourage teamwork

1. My team leader (members) encourages (encourage) me to work together with other individuals who are part of the team.
2. My team leader (members) urges (urge) me to work as a team with other individuals who are part of the team.
3. My team leader (members) advises (advise) me to coordinate my efforts with other individuals who are part of the team.

Participative goal setting

1. My team leader (members) and I work together to decide what my performance goals should be.
2. My team leader (members) and I sit down together and reach agreement on my performance goals.
3. My team leader (members) works (work) with me to develop my performance goals.

Encourage independent action

1. My team leader (members) encourages (encourage) me to search for solutions to my problems without supervision.
2. My team leader (members) encourages (encourage) me to find solutions to my problems without his/her (their) direct input.
3. My team leader (members) advises (advise) me to solve problems when they pop up without always getting a stamp of approval.
4. My team leader (members) urges (urge) me to assume responsibilities on my own.

Encourage opportunity thinking

1. My team leader (members) advises (advise) me to look for the opportunities contained in the problems I face.
2. My team leader (members) encourages (encourage) me to view unsuccessful performance as a chance to learn.
3. My team leader (members) urges (urge) me to think of problems as opportunities rather than obstacles.

Encourage self-development

1. My team leader (members) encourages (encourage) me to develop myself.
2. My team leader (members) encourages (encourage) me to develop my skills and abilities.
3. My team leader (members) encourages (encourage) me to seek out opportunities to learn.
4. My team leader (members) encourages (encourage) me to seek out educational opportunities.

Controls

In addition to the independent variables described above, I also measured and controlled for individual differences in education, entrepreneurial experience, entrepreneurial success, entrepreneurial intention, employment status, length of employment, and industry. Previous research in entrepreneurship has addressed the impact that human capital has on firms (Davidsson & Honig, 2003; Gimeno, Folta, Cooper, & Woo, 1997; Ucbasaran, Westhead, & Wright, 2008). Accordingly, I also collected data for firm-level controls (size, age, number of employees, industry, etc). Finally, I included open-ended questions for qualitative descriptions on the nature of the NVT, and motivations for founding the company.

CHAPTER 4 – ANALYSIS AND RESULTS

Chapter Overview

The hypothesized model, presented in Figure 1, includes constructs at the individual, group, and firm level and for the dissertation I employed psychometrically established measures used in previous research. The recruitment of a sufficient sample involved the participation of all co-founders individually ($N = 80$), at the group level in NVT ($N=40$), and from 40 different firms. This survey method was necessary for testing relationships between motivations, perceptions of time and environmental uncertainty. This chapter discusses the sample recruited, reliability of measures used, statistical assumptions, hypothesis testing, and results from the five hypotheses stated a priori.

Sample

Initially, I identified 270 California companies operating in the Los Angeles area for this study. These firms were selected because it was evident that at least two co-founders were involved with, both, creating the new venture and leading its operations. An introductory letter was sent to each company. Of the 270 companies identified, 68 companies responded (25.2%). I expected a low response rate due to factors such as: the busy nature of startup ventures, the culture of the Los Angeles area, co-founders not being able to spare time for the study, etc. Among the 68 companies that responded, 59 were interviewed. The 9 companies that were not interviewed were dropped from the sample due to scheduling conflicts, lack of interest, and other reasons preventing them from committing to participate in the research. 19 out of the 59 companies were dropped from the dataset because only one of the cofounders was able to participate in the study

or due to there being incomplete data. If an entrepreneur was unable to meet in person, I attempted to interview him or her through video-conferencing (Skype, Google Chat, Facetime), with traditional phone meetings being a last resort. I collected some of the surveys online or through email; however, these responses were removed from the dataset for this dissertation after noticing partial answers to the questions.

There were 80 total participants in the study. The data were gathered on the individual level of co-founders ($N = 80$), at the group level in NVT ($N=40$), and at the firm level ($N=40$). Demographic results of the respondents include: average age of the respondent ($N=34$ years old), gender (76% Male), race (87.5% Caucasian), marital status (35% married), and education (74% had completed some college). New ventures were less than 7 years old, with an average duration of 2.6 years in operation. The number of employees varied across the sample, with 5 companies having 0 employees, 24 companies with 1-2 full-time employees, 10 companies with 2-5 employees and 6 companies with more than 5 employees. For this study, I intentionally did not set industry boundaries, however, the majority of the new ventures included in the sample were technology companies related to industries such as sports, restaurants, education, social media, communications, and entertainment. In order to be in compliance with IRB protocol and to fulfill my agreement with participants of this study, I removed individual and firm identifiers from the analysis results.

Reliability Analysis

Cronbach's Alpha, originally developed by Cronbach (1951), is a statistical measure of internal reliability. Internal reliability is the consistency of responses to items

on a measure based on what is expected from an underlying construct. A construct is the hypothetical variable (i.e. Temporal Depth) that is being measured (Hatcher, 1994). Cronbach's Alpha coefficients range in value from 0 to 1 and Nunnally (1978) has indicated an alpha of 0.7 to be an indicator of acceptable reliability on a factor or construct in a measure used for research.

Temporal Depth

The temporal depth index (TDI) is a 6-item scale to measure perceptions in temporal distances into the future and past that was developed by Bluedorn (2002). A Cronbach's Alpha of .892 ($N = 80$) was observed on the six items which indicates that TDI had strong internal reliability.

Polychronicity

This study drew on the theory from Bluedorn et al., (1999) and used the Inventory of Polychronic Values (IPV). The IPV is a 10-item measure developed by Bluedorn et al. (1999). A Cronbach's Alpha of .881 ($N = 80$) was observed on the ten items which indicates that IPV had strong internal reliability.

Environmental Hostility

Environmental hostility was defined by 6 items taken from Green et al., (2008) and Slevin and Covin, (1997). A Cronbach's Alpha of .578 ($N = 80$) on the 6 items was observed which indicates that environmental hostility had weak internal reliability. However, all the items were left in the scale to stay consistent with the literature.

Environmental Dynamism

Environmental dynamism was taken from 6 items from Green et al., (2008) and Miller and Friesen, (1982). A Cronbach's Alpha of .828 ($N = 80$) on the 6 items indicates that environmental dynamism had strong internal reliability.

Leadership Behavior

This scale was adapted to represent a co-founder context by replacing "team leader" with "co-founder" and by looking at direct leadership style. A Cronbach's Alpha of .987 ($N = 80$) on the 21 items indicates that leadership behavior had very strong internal reliability.

Statistical Assumptions

Outliers

Any statistical modeling procedure such as correlation and regression carries a set of assumptions and the accuracy of results is vulnerable not only to a violation of these assumptions but also to disproportionate influence from unusual observations (Flora, La Brish, & Chalmers, 2012). Outliers in the variables being examined can disrupt and distort results through violations of other assumptions and lead to type 1 and type 2 errors.

An outlier analysis was done on the variables of past temporal depth (between co-founders), future temporal depth (between co-founders), total temporal depth (between co-founders), environmental dynamism (between co-founders) and environmental

hostility (between co-founders), total temporal depth (combined), environmental dynamism (combined) and environmental hostility (combined), performance (between co-founders), and polychronicity (between co-founders). Pragmatic motivation and leadership style were dummy coded to prevent outliers.

There were 5 significant outliers found on total temporal depth (combined), 2 significant outliers on past temporal depth (between co-founders), 6 significant outliers in environmental hostility (between co-founders), 2 significant outliers in environmental hostility (combined), and 3 significant outliers on temporal depth (between co-founders). The literature is mixed on how to deal with outliers; therefore, I considered the theoretical relevance of these cases as they relate to my research question (Osborne & Overbay, 2015). New venture teams that are identified as outliers based on this methodology are actually cases of interest for the purpose of this dissertation. Upon closer look, it also was clear that the cases were not due to data inputting errors and appeared to be legitimate cases and a potential focus of inquiry. Therefore, I decided to keep these cases in the dataset for the analyses that follow. I discuss how this decision impacts the limitations of interpreting the results in Chapter 5.

Normality

There is an assumption of normal distribution that should be met by each factor before proceeding with any other analyses (Freedman, Pisani, & Purves, 2011). Normal distribution follows a “bell-shaped curve” which is more formally known as the empirical rule. Normal distribution is where about 68% of the area under the curve falls within 1 standard deviation of the mean, about 95% of the area under the curve falls within 2

standard deviations of the mean, and about 99.7% of the area under the curve falls within 3 standard deviations of the mean. The histograms were examined with skewness and kurtosis scores. Skewness and Kurtosis scores of zero are indicative of a Gaussian or Normal distribution (Freedman, Pisani, & Purves, 2011).

Table 1

Skewness and Kurtosis Score Evaluation			
		Statistic	Std. Error
Environmental Hostility – combined	Mean	49.9259	1.35761
	Skewness	0.309	0.448
	Kurtosis	-0.07	0.872
Environmental Dynamism – combined	Mean	25.463	1.1809
	Skewness	-0.047	0.448
	Kurtosis	-1.546	0.872
Environmental Hostility - agreement between cofounders	Mean	0.9515	0.05069
	Skewness	0.883	0.448
	Kurtosis	0.831	0.872
Environmental Dynamism - agreement between cofounders	Mean	3.2213	0.40883
	Skewness	-0.087	0.448
	Kurtosis	-1.365	0.872
Cofounder Similarity Agreement	Mean	8.1448	0.97063
	Skewness	0.893	0.448
	Kurtosis	-0.501	0.872
Total Temporal Depth - combined	Mean	4383.6111	615.19276
	Skewness	0.895	0.448
	Kurtosis	-0.148	0.872
Past Temporal Depth - agreement between cofounders	Mean	651.2628	125.07229
	Skewness	1.423	0.448
	Kurtosis	2.134	0.872

Future Temporal Depth agreement between cofounders	Mean	483.4166	95.48506
	Skewness	1.405	0.448
	Kurtosis	1.511	0.872
Total Temporal Depth - agreement between cofounders	Mean	1134.6794	206.91567
	Skewness	1.345	0.448
	Kurtosis	1.786	0.872
Total Polychronicity	Mean	4.013	0.20462
	Skewness	-0.181	0.448
	Kurtosis	-1.081	0.872

The skewness scores were all under 1.0 except for past temporal depth (between co-founders), future temporal depth (between co-founders), and total temporal depth (between co-founders) which all had positive scores that were under 1.5. This means that they may still be positively skewed but could still be normal. The kurtosis scores were mostly close to 1-1.5 and under 3 on all variables lending evidence that the distribution is symmetrical, but with a wider and flatter peak which may be due to wider distribution of ratings. The Central Limit Theorem states that in the case of the distribution you start with, regardless of the shape of the population, its distribution of sample means becomes normal as the size of the sample increases and the necessary size of each sample must be 30 or larger (Freedman, Pisani, & Purves, 2011). In this case, the sample size is 40, and after the skewness and kurtosis analyses normal distribution can be assumed.

Descriptive Statistics

Temporal Depth

After checking for the reliability of the measures, skewness and kurtosis, I examined differences in temporal depth between co-founders in the same firm. Temporal depth is a predictive variable for all five hypotheses in this dissertation, and it is clear from Table 2 that there are sizable differences in temporal depth perceptions between co-founders in the same firm. Co-founders in this sample had an average difference of 6.85 years on future temporal depth perceptions and 12.94 years in past temporal depth perceptions. Recall that these variables were computed by measuring short-term, mid-term and long-term temporal depth for the past and future. Total temporal depth differences between co-founders in the same firm for this sample was 8.53 years. On average, co-founders' past temporal depth was 11.84 years, future temporal depth was 7.93 years, and total temporal depth measured 9.89 years. Descriptive statistics for all variables in the study are also included below.

Table 2

Descriptive Statistics

Descriptive Statistics - All Variables					
	N	Minimum	Maximum	Mean	Std. Deviation
Environmental Hostility – combined	40	40	72	52.65	9.61716
Environmental Dynamism – combined	40	17.5	37	25.75	6.07327
Environmental Hostility - agreement between cofounders	40	0.47	2.24	1.0607	0.42197
Environmental Dynamism (R) - agreement between cofounders	40	0	10.61	4.278	2.96107

CoFounders similarity – combined	40	33.5	80.5	54.6375	12.96494
CoFounder Similarity Agreement	40	0.71	17.68	8.4676	5.22687
Directive Leader	40	0	1	0.5	0.50637
Pragmatic Motivatio	40	0	1	0.425	0.50064
Total Temporal Depth - combined (in days)	40	1087.5	25692.5	7216.925	6445.17407
Future Temporal depth - combined (in days)	40	1210	18979	5790.8	4395.25281
Past Temporal Depth - combined (in days)	40	567	43994	8643.05	10104.49487
Past Temporal Depth (days) - agreement between cofounders	40	14.14	6921.63	1128.9195	1505.59141
Future Temporal Depth (days)- agreement between cofounders	40	14.14	1875.48	634.7933	555.38283
Total Temporal Depth (days) - agreement between cofounders	40	28.28	7588.43	1763.7129	1780.61773
Polychronicity - agreement between cofounders	40	0.35	2.69	1.2092	0.62281
Total Polychronicity	40	2.05	5.65	4.1025	0.90192
Valid N (listwise)	40				

**Temporal Depth - Difference
between Cofounders (In Days)**

	N	Range	Minimum	Maximum	Mean
FUTURE	40	7865	60	7925	2501
PAST	40	28974	60	29034	4724
TOTAL	40	14883	44	14927	3114

**Temporal Depth - Difference
between Cofounders (In Years)**

	N	Range	Minimum	Maximum	Mean
FUTURE	40	21.55	0.16	21.71	6.85
PAST	40	79.38	0.16	79.55	12.94
TOTAL	40	40.77	0.12	40.89	8.53

Hypotheses

H1: Differences in temporal perceptions within an NVT will lead to more disagreements in the perception of environmental uncertainty among the members of the NVT.

Using two multiple regression models to capture within group variability, the within group variables of Past Temporal Depth - agreement between co-founders, Future Temporal Depth - agreement between co-founders, and Total Temporal Depth - agreement between co-founders were used as independent variables in both models to predict the first outcome variable of Environmental Hostility - agreement between co-founders and then the second outcome variable of Environmental Dynamism - agreement between co-founders. Regression can only predict one outcome variable at a time. Due to small sample size, control variables were removed from the models.

First Model:

$$Y \text{ (Environmental Hostility)} = \beta_0 + \beta_1(\text{Past Temporal Depth } x_1) + \beta_2(\text{Future Temporal Depth } x_2) + \beta_3(\text{Total Temporal Depth } x_3) + \varepsilon.$$

Second Model:

$$Y \text{ (Environmental Dynamism)} = \beta_0 + \beta_1(\text{Past Temporal Depth } x_1) + \beta_2(\text{Future Temporal Depth } x_2) + \beta_3(\text{Total Temporal Depth } x_3) + \varepsilon.$$

All X variables should be correlated with Y in each model.

Environmental Hostility only correlates with Total Temporal Depth.

Environmental Dynamism correlates with all except Future Temporal Depth.

Table 3.

Summary Statistics and Correlation matrix

		Environmental Hostility	Environmental Dynamism	Past Temporal Depth	Future Temporal Depth	Total Temporal Depth
Environmental Hostility	Pearson	1	.207	-.095	.312*	.017
	Correlation					
	Sig. (2-tailed)		.200	.559	.050	.918
	N	40	40	40	40	40
Environmental Dynamism	Pearson	.207	1	.414**	-.042	.337*
	Correlation					
	Sig. (2-tailed)	.200		.008	.795	.034
	N	40	40	40	40	40
Past Temporal Depth	Pearson	-.095	.414**	1	.356*	.957**
	Correlation					
	Sig. (2-tailed)	.559	.008		.024	.000
	N	40	40	40	40	40
Future Temporal Depth	Pearson	.312*	-.042	.356*	1	.613**
	Correlation					
	Sig. (2-tailed)	.050	.795	.024		.000
	N	40	40	40	40	40
Total Temporal Depth	Pearson	.017	.337*	.957**	.613**	1
	Correlation					
	Sig. (2-tailed)	.918	.034	.000	.000	
	N	40	40	40	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

First Model:

$$Y \text{ (Environmental Hostility)} = \beta_0 + \beta_1(\text{Past Temporal Depth } x_1) + \beta_2 \text{ (Future Temporal Depth } x_2) + \beta_3 \text{ (Total Temporal Depth } x_3) + \varepsilon.$$

The model is marginally significant at $F(2, 37) = 3.166$, $p = 0.054$. Next, the model was re-run without total temporal depth or past temporal depth since they were not significant predictors of environmental hostility.

Table 4.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.382 ^a	.146	.100	.40033	.146	3.166	2	37	.054

a. Predictors: (Constant), Total Temporal Depth, Future Temporal Depth

ANOVA ^a						
Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression		2	.507	3.166	.054 ^b
	Residual		37	.160		
	Total		39			

a. Dependent Variable: Environmental Hostility

b. Predictors: (Constant), Total Temporal Depth, Future Temporal Depth

Coefficients ^a							
Model	Unstandardized		Standardized	t	Sig.	Collinearity	
	Coefficients		Coefficients			Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.944	.100		9.478	.000		
1 Future Temporal Depth	.000	.000	.483	2.514	.016	.624	1.602
Total Temporal Depth	-6.623E-005	.000	-.279	-1.454	.154	.624	1.602

a. Dependent Variable: Environmental Hostility

Excluded Variables ^a							
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1 Past Temporal Depth	. ^b000	.	.000

a. Dependent Variable: Environmental Hostility

b. Predictors in the Model: (Constant), Total Temporal Depth, Future Temporal Depth

Collinearity Diagnostics ^a						
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Future Temporal Depth (days)- agreement between cofounders	Total Temporal Depth (days) - agreement between cofounders
1	1	2.523	1.000	.05	.04	.04
1	2	.302	2.890	.86	.05	.31
	3	.174	3.804	.09	.92	.65

a. Dependent Variable: Environmental Hostility

Revised First Model:

$$Y (\text{Environmental Hostility}) = \beta_0 + \beta_1 (\text{Future Temporal Depth} \times 1) + \varepsilon.$$

The model is just significant at $F(1, 38) = 4.099$, $p = 0.05$. Future Temporal Depth accounts for 9.7% ($R^2 = .097$) of Environmental Hostility.

Table 5.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.312 ^a	.097	.074	.40615	.097	4.099	1	38	.050

a. Predictors: (Constant), Future Temporal Depth

ANOVA ^a						
Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression		.676	1	.676	4.099
	Residual		6.268	38	.165	.050 ^b
	Total		6.944	39		

a. Dependent Variable: Environmental Hostility

b. Predictors: (Constant), Future Temporal Depth

Coefficients ^a							
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance VIF
1	(Constant)	.910	.098		9.265	.000	
	Future Temporal Depth	.000	.000	.312	2.024	.050	1.000 1.000

a. Dependent Variable: Environmental Hostility

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Future Temporal Depth (days)-agreement between cofounders
1	1	1.757	1.000	.12	.12
	2	.243	2.687	.88	.88

a. Dependent Variable: Environmental Hostility

First run Second Model:

$$Y (\text{Environmental Dynamism}) = \beta_0 + \beta_1(\text{Past Temporal Depth } x_1) + \beta_2 (\text{Future Temporal Depth } x_2) + \beta_3 (\text{Total Temporal Depth } x_3) + \varepsilon.$$

The model is significant at $F(2, 37) = 4.997, p = 0.012$. Total Temporal depth was dropped and the model was re-run.

Table 6.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.461 ^a	.213	.170	2.69749	.213	4.997	2	37	.012

a. Predictors: (Constant), Past Temporal Depth, Future Temporal Depth

ANOVA^a						
Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression		72.721	2	36.361	4.997
	Residual		269.229	37	7.276	.012 ^b
	Total		341.950	39		

a. Dependent Variable: Environmental Dynamism

b. Predictors: (Constant), Past Temporal Depth, Future Temporal Depth

Coefficients ^a							
Model	Unstandardized		Standardized	t	Sig.	Collinearity	
	Coefficients		Coefficients			Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.922	.671		5.842	.000	
	Future Temporal Depth						
	(days)- agreement	-.001	.001	-.217	-1.392	.172	.873
	between cofounders						1.145
	Past Temporal Depth						
	(days) - agreement	.001	.000	.491	3.148	.003	.873
	between cofounders						1.145

a. Dependent Variable: Environmental Dynamism

Excluded Variables ^a							
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1	Total Temporal Depth (days) - agreement between cofounders	. ^b	.	.	.000	.	.000

a. Dependent Variable: Environmental Dynamism

b. Predictors in the Model: (Constant), Past Temporal Depth, Future Temporal Depth

Second run Second Model:

$$Y \text{ (Environmental Dynamism)} = \beta_0 + \beta_2 \text{ (Future Temporal Depth } x_2) + \beta_3 \text{ (Past Temporal Depth } x_3) + \varepsilon.$$

Third run Second Model:

$$Y \text{ (Environmental Dynamism)} = \beta_0 + \beta_3 \text{ (Past Temporal Depth } x_3) + \varepsilon.$$

The model was significant at $F(1, 38) = 7.862, p = 0.008$. Past temporal depth accounts for 17.1% of environmental dynamism.

Table 7.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.414 ^a	.171	.150	2.73057	.171	7.862	1	38	.008

a. Predictors: (Constant), Past Temporal Depth

ANOVA^a						
Model	Sum of Squares		df	Mean Square	F	Sig.
	Regression		1	58.621	7.862	.008 ^b
1	Residual		38	7.456		
	Total		39			

a. Dependent Variable: Environmental Dynamism

b. Predictors: (Constant), Past Temporal Depth

Coefficients ^a								
Model		Unstandardized		Standardized	t	Sig.	Collinearity	
		Coefficients		Coefficients			Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.359	.542		6.196	.000		
	Past Temporal Depth							
	(days) - agreement between cofounders	.001	.000	.414	2.804	.008	1.000	1.000

a. Dependent Variable: Environmental Dynamism

Collinearity Diagnostics ^a					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Past Temporal Depth (days) - agreement between cofounders
1	1	1.605	1.000	.20	.20
	2	.395	2.015	.80	.80

a. Dependent Variable: Environmental Dynamism (R) - agreement between cofounders

H2: Total temporal depth of an NVT will be negatively related to perceptions of environmental uncertainty by the NVT.

Pearson Product Moment Correlations were run on Total Temporal Depth, Environmental Hostility and Environmental Dynamism since they were all scale variables (Freedman, Pisani, & Purves, 2011). Hypothesis 2 was partially supported, with a significant correlation between Temporal Depth and Environmental Hostility (.558, $p < .001$). However, the relationship is in the opposite direction to what was predicted, with a positive correlation between Total Temporal Depth and Environmental Hostility. The hypothesis predicts that this relationship is negative and I will discuss this finding in Chapter 5. Polychronicity agreement among the NVT is significantly correlated with Total Temporal Depth (.834, $p < .001$). However, the correlation with environmental dynamism was insignificant. See Table 8 below for results.

Table 8.

Pearson Product Moment Correlations				
		Total Temporal Depth	Future Temporal Depth	Past Temporal Depth
Polychronicity - agreement between cofounders	Pearson Correlation	.834**	0.669	.773**
	Sig. (2-tailed)	0	0	0
	N	40	40	40
Environmental Hostility - combined	Pearson Correlation	.558**	.487**	0.5
	Sig. (2-tailed)	0	0.001	0.001
	N	40	40	40
Environmental Dynamism - combined	Pearson Correlation	0.049	-0.114	0.112
	Sig. (2-tailed)	0.765	0.482	0.491
	N	40	40	40

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

H3: NVTs formed from pragmatic motivations will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

According to Jose (2013), moderator analysis can be done by using a linear regression of the two variables of interest in block one in SPSS. Next, an interaction variable is created by multiplying the proposed moderator by the predictor and entering it into block two and running the analysis. If the R square change value due to the addition of the interaction variable is significant, then a moderation of the two variables of interest has been confirmed.

A moderation analysis was run using regression and an interaction term. The analysis was run for the predictor variable of Total Temporal Depth (between co-founders) and the outcome variable of Environmental Hostility (between co-

founders) with Pragmatic Motivations as the moderator. When the interaction (Pragmatic X Temporal) was added, the R square change value of .040 was not statistically significant at $F(1, 36) = .647, p = 0.427$. Therefore, this hypothesis was not supported. Pragmatic motivation does not moderate total temporal depth (between cofounders) and environmental hostility (between cofounders). See Table 9.

Table 9.

Model Summary^c									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.570 ^a	.325	.289	8.11154	.325	8.911	2	37	.001
2	.581 ^b	.337	.282	8.15053	.012	.647	1	36	.427

a. Predictors: (Constant), Pragmatic Motivation, Total Temporal Depth

b. Predictors: (Constant), Pragmatic Motivation, Total Temporal Depth, Interaction

c. Dependent Variable: Environmental Hostility – combined

The next analysis was run for the predictor variable of Total Temporal Depth (between cofounders) and the outcome variable of Environmental Dynamism (between cofounders) with Pragmatic Motivations as the moderator. When the interaction term (Pragmatic X Temporal) was added, the R square change values of .019 was not statistically significant at $F(1, 36) = 0.733, p = 0.398$. So, pragmatic motivation does not moderate total temporal depth (between cofounders) and environmental dynamism (between cofounders). See Table 10.

Table 10

Coefficients^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	51.849		23.504	.000
	Total Temporal Depth	.002	.398	2.931	.006
	Pragmatic Motivation	-7.042	-.367	-2.698	.010
2	(Constant)	50.788		19.690	.000
	Total Temporal Depth	.003	.500	2.686	.011
	Pragmatic Motivation	-4.997	-.260	-1.368	.180
	Interaction	-.001	-.177	-.804	.427

a. Dependent Variable: Environmental Hostility – combined

Coefficients^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	2.371		3.242	.003
	Total Temporal Depth	.001	.372	2.545	.015
	Pragmatic Motivation	1.917	.324	2.214	.033
2	(Constant)	2.498		2.898	.006
	Total Temporal Depth	.001	.333	1.648	.108
	Pragmatic Motivation	1.672	.283	1.370	.179
	Interaction	.000	.068	.287	.776

a. Dependent Variable: Environmental Dynamism (R) - agreement between cofounders

H4: A NVTs Directive Leader (as opposed to an empowering leader) will negatively moderate the relationship between temporal depth and environmental uncertainty perceived by the NVT.

The next analysis was run for the predictor variable of Total Temporal Depth (between cofounders) and the outcome variable of Environmental Hostility (between cofounders) with Directive Leadership as the moderator. When the interaction term (Direct X Temporal) was added, the R square change value of .069 was not statistically significant at $F(1, 28) = 2.511, p = 0.124$. Hypothesis 4 was not supported. See Table 11. In both results, the interaction term was not significant ($p > .05$)

Table 11.

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	46.161		16.738	.000
	Total Temporal Depth	.003	.499	3.246	.002
	Directive Leader	3.464	.182	1.186	.243
2	(Constant)	46.127		15.652	.000
	Total Temporal Depth	.003	.502	2.913	.006
	Directive Leader	3.575	.188	.843	.405
	LEAD_X_TEMP	-8.013E-005	-.008	-.037	.971

a. Dependent Variable: Environmental Hostility – combined

The next analysis was run for the predictor variable of Total Temporal Depth (between cofounders) and the outcome variable of Environmental Dynamism (between cofounders) with Directive Leadership as the moderator. When the interaction term (Direct X Temporal) was added, the R square change value of .022 was not statistically significant at $F(1, 34) = .758, p = 0.390$. So,

directive leadership does not moderate total temporal depth (between cofounders) and environmental dynamism (between cofounders). See Table 12.

Table 12.

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	25.232		12.992	.000
	Total Temporal Depth	.001	.149	.868	.391
	Directive Leader	-.754	-.063	-.367	.716
	(Constant)	25.264		12.174	.000
2	Total Temporal Depth	.000	.145	.753	.456
	Directive Leader	-.861	-.072	-.288	.775
	LEAD_X_TEMP	7.639E-005	.012	.050	.961

a. Dependent Variable: Environmental Dynamism – combined

H5: Polychronicity will negatively moderate the relationship between temporal depth and the perceptions of environmental uncertainty perceived by the NVT.

The next analysis was run for the predictor variable of Total Temporal Depth (between cofounders) and the outcome variable of Environmental Hostility (between cofounders) with Polychronicity as the moderator. When the interaction term (Poly X Temporal) was added, the R square change value of .116 was statistically significant at $F(1, 36) = 4.74, p = .036$. So, polychronicity moderates total temporal depth (between cofounders) and environmental hostility (between

cofounders). See Table 13. However, no moderation was found with environmental dynamism ($p > .244$)

Table 13.
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.040 ^a	.002	-.052	.43289	.002	.029	2	37	.971
2	.343 ^b	.118	.044	.41254	.116	4.740	1	36	.036

a. Predictors: (Constant), Directive Leader, Total Temporal Depth

b. Predictors: (Constant), Directive Leader, Total Temporal Depth, POLY_X_TEMP

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.011	2	.005	.029	.971 ^b
	Residual	6.934	37	.187		
	Total	6.944	39			
2	Regression	.818	3	.273	1.601	.206 ^c
	Residual	6.127	36	.170		
	Total	6.944	39			

a. Dependent Variable: Environmental Hostility

b. Predictors: (Constant), Directive Leader, Total Temporal Depth

c. Predictors: (Constant), Directive Leader, Total Temporal Depth, POLY_X_TEMP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.032	.137		7.532	.000
	Total Temporal Depth (days) - agreement between cofounders	6.980E-006	.000	.029	.169	.867

	Directive Leader	.032	.145	.038	.219	.828
	(Constant)	.861	.153		5.645	.000
2	Total Temporal Depth (days) - agreement between cofounders	.000	.000	1.043	2.110	.042
	Directive Leader	.134	.146	.161	.919	.364
	POLY X TEMP	.000	.000	-1.037	-2.177	.036

a. Dependent Variable: Environmental Hostility

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.115	.905		3.440	.001
	Total Temporal Depth (days) - agreement between cofounders	.001	.000	.352	2.145	.039
	Directive Leader	.262	.959	.045	.273	.786
	(Constant)	3.757	1.052		3.573	.001
2	Total Temporal Depth (days) - agreement between cofounders	.000	.001	-.189	-.390	.699
	Directive Leader	-.123	1.008	-.021	-.122	.904
	POLY_X_TEMP	.000	.000	.554	1.183	.244

a. Dependent Variable: Environmental Dynamism

Chapter Summary

Chapter 4 reports the results of this dissertation. There were 80 total participants in the study. The data were gathered on the individual level of co-founders ($N = 80$), at the group level in NVT ($N=40$), and at the firm level ($N=40$). Cronbach's Alpha analyses found Temporal Depth Index (TDI), Polychronicity, Environmental Dynamism, and Leadership to have high reliability while Environmental Hostility had weak reliability. An outlier analysis was done and there were significant outliers found on total temporal depth (combined), past temporal depth (between cofounders), environmental hostility

(between cofounders), environmental hostility (combined), and temporal depth (between cofounders). The outliers were not removed due to their theoretical relevance to the purpose of the study. The rest of the variables had no significant outliers. A preliminary analysis for skewness and kurtosis provided evidence that the distribution was symmetrical.

Descriptive statistics for temporal perceptions revealed sizable variation across cofounders within the same firm for past, future and total temporal depth. One hypothesis was fully supported (H1) and two hypotheses were partially supported (H2 – opposite direction as predicted and H5). No support was found for H3 and H4. I summarize the analyses below.

The analysis on hypothesis one used two multiple regression models to capture within group variability of the independent variables of Past Temporal Depth (days) - agreement between cofounders, Future Temporal Depth (days) - agreement between cofounders, and Total Temporal Depth (days)-agreement between cofounders. The outcome variable of Environmental Hostility - agreement between cofounders was used in the first model and then the second model used the outcome variable of Environmental Dynamism (R) - agreement between cofounders. Both analyses were statistically significant.

On hypothesis two, Pearson Product Moment Correlations were run on Total Temporal Depth, Environmental Hostility and Environmental Dynamism. Partial support was found for hypothesis two, with significant correlations for environmental hostility but not for environmental dynamism.

Six moderation analyses were run using regression and an interaction term for hypotheses 3 through five. The analysis was run for the predictor variable of Total Temporal Depth (between cofounders) and the outcome variables of Environmental Hostility (between cofounders) and Environmental Dynamism (between cofounders) with Pragmatic Motivations, Directive Leadership, and Polychronicity as the moderators. Hypotheses 3 and 4 were not supported. Hypothesis 5 was partially supported, with moderation significant for environmental hostility but not environmental dynamism. In the next chapter, I discuss the implications, limitations and future direction of this study.

CHAPTER 5- DISCUSSION AND CONCLUSION

Chapter Summary

The central research question examined in this dissertation is: how do the individual perceptions of time impact a new venture team? Specifically, the study examined whether or not temporal depth (as a total measure within the NVT and the congruence between cofounders) factors into how reactive entrepreneurs may be to the environmental changes and threats that they face in their new venture team. The results from hypotheses tested in Chapter 4 suggest that cofounders in the same new venture team have very different perceptions of time. Their agreement, or congruence of temporal depth (future, past, and total) impacts their new venture team's perception regarding environmental hostility. This relationship is negatively moderated by polychronicity. Leadership and motivations for forming the NVT were not found to be significant within this sample. In the following sections I describe the implications and limitations of these results and suggest future directions for related research.

Implications

Prior to testing the various hypotheses, I aimed to learn about the differences of temporal perceptions within a new venture team. Upon examining temporal depth measures for the past and future, it was clear that cofounders' individual perceptions of time were very different from those of their partners. At a minimum, cofounders were 44 days apart as measured by temporal depth. At maximum, cofounders could be 29,034

days apart (or 79.55 years) on their temporal depth. This difference between cofounders was substantial across the sample, with the average difference in future temporal depth being 6.85 years and the average past temporal depth being 12.94 years. Entrepreneurs could range from 7 days to 50 years for their response on past long-term temporal depth questions. Both, short-term past and future temporal depth ranged from 1 day to 3 years across the sample. Long-term future perceptions ranged from 1 year to 20 years. Compared to Bluedorn & Martin (2008), temporal depth averages in this study were similar for short-term, mid-term and long-term future perceptions. However, the long-term and mid-term past temporal depth averages were slightly higher in the current sample than they were in the Bluedorn & Martin (2008) study. Specifically, the mean for long-term temporal depth across the 80 entrepreneurs was 7.54 years as compared to 4.78 years in the previous study. Mid-term past temporal depth was 3.95 years as compared to 1.15 years in the Bluedorn & Martin (2008) study.

These results replicate previous findings of the variation in temporal depth among entrepreneurs. Despite the similarities in the averages for all six categories of temporal depth, there is evidence of high variation in temporal depth within each NVT. These individual differences between cofounders working on the same venture provide early evidence of the main assumption underlying the five hypotheses in this dissertation. That assumption is that cofounders will have different temporal perspectives. If cofounders had very similar temporal perceptions as their counterparts, then it wouldn't be possible to measure the impact of the differences in temporal depth on each cofounder's perception of environmental uncertainty. However, the amount of congruence between cofounders of the NVTs varies across the firms in the data set. In developing the first

hypothesis, I argued that temporal differences among cofounders should decrease NVT cohesion and cognitive conflict should increase disagreement in environmental uncertainty. Specifically, within this dataset, differences between cofounders' perceptions of future temporal depth increased their disagreements in perceiving environmental hostility. Past temporal depth differences among cofounders were found to have the most impact on the disagreement in perceived environmental dynamism (all measures of temporal depth were significantly correlated with environmental dynamism). This result replicates past findings of correlation between temporal depth and environmental dynamism (Bluedorn & Ferris, 2004; Nadkarni & Chen, 2014).

It is interesting to notice that environmental hostility and environmental dynamism may be impacted by different constructs of temporal depth. Future temporal depth differences increase disagreements in environmental hostility perceptions; whereas, past temporal differences increase differences in environmental dynamism perceptions. This finding shows such relationships between perceptions of time and the environment at the team-level and is therefore an important contribution to the literature. The study suggests that cofounders have different time frames, and these time frames impact how they view threats and changes within their environment. Further, differences in how these cofounders perceive the past are related to a specific perception of environmental uncertainty (in this case, environmental dynamism). Perhaps, past temporal depth is related to environmental dynamism because the construct itself seems to involve reflections on the past. For example, item 4 states "The set of competitors in my industry has remained relatively constant over the last three years." Other items do include future-

oriented statements (such as forecasting product demand, customer requirements, competitive actions, product obsolescence, etc.). It is also reasonable to consider that future temporal differences impact environmental hostility, since entrepreneurs are likely thinking about the future when evaluating threats within the industry.

Hypothesis 2 was partially supported, with a significant relationship found between environmental hostility and temporal depth (total, past and future). However; whereas, a significant relationship was found between the variables, it was in the opposite direction to what was predicted (hypothesized originally to be negative). In fact, the relationship between total temporal depth of the NVT was positively correlated with environmental hostility. As temporal depth increased, the NVT grew more sensitive to environmental threats. The hypothesis was originally developed with the logic that the NVT would be less concerned about immediate threats if they were thinking about events further into the future. An alternative explanation that supports the evidence from the actual results is that environmental hostility perceptions involve high sensitivity to both the current and future threats faced within an industry. NVTs with high temporal depth, therefore, become more sensitive to these threats as opposed to being less sensitive for a variety of possible reasons. For example, a NVT with high temporal depth may be contemplating competitive threats that are over 10 years in the future and may actually add these risks to the risks they have already identified in their present situation. High temporal depth may not reduce the sensitivity that the entrepreneurs have to present issues they are facing.

Hypothesis 5 is also related to the present situation (as opposed to the past or future). In this hypothesis, I tested the moderating effect of polychronicity. As NVTs increase in their preference for engaging in tasks that take place in the present, I predicted that this would reduce their focus on events that take place in the past or future. This hypothesis was supported, and leads to another contribution of the dissertation. Previous studies have found relationships between temporal depth and polychronicity. However, this is the first interaction effect found with these temporal variables. Polychronicity negatively moderates the relationship between total temporal depth and environmental hostility. The higher the polychronicity within the NVT, the less impact temporal depth has on environmental threats perceived in the industry. Perhaps these NVTs tend to be engaged in several ongoing activities at any given moment making them overall less sensitive to threats. However, if temporal depth positively increases environmental hostility, polychronic entrepreneurs appear to be less aware of such threats than entrepreneurs who prefer to engage in one task at a given time.

There is much to learn about the dynamics within the founding team of a new venture. This study provides early evidence of possible reasons why cofounders may eventually see threats and changes for the same business differently. If individual temporal perceptions do impact how a NVT evaluates risks in their environment, then it is important for cofounders to understand that they have a different temporal depth than their counterpart and how it might lead to conflict or cohesion within the NVT. Environmental uncertainty is an important dependent variable in entrepreneurship because the environment poses constraints on an individual's selective attention within a

situational context (Ocasio, 1997). Entrepreneurs are decision makers with limited attention (Gifford, 1998). Understanding how an entrepreneur perceives changes and threats in their environment may be helpful to research related to entrepreneurship decision-making. In this study, environmental perceptions are compared between cofounders within the same NVT, with results that indicate that both entrepreneurs may perceive the same environment they operate in quite differently. These differences may be part of the reason why certain NVTs disagree on strategic decisions as a new venture grows, causing harmful conflict to the business. There are several unanswered questions that I discuss in the future research section shown below. However, this study establishes a foundation for building on new research related to NVTs.

Limitations and Future Research

There are several limitations to the results and implications of this study. The primary data used in this analysis measured subjective perceptions. These measurements were sufficient for the reliability analyses and all scales were based on well-established measures from the literature. However, the data were self-reported from the entrepreneurs within the sample and risk respondent bias and measurement error.

Another limitation of the results was the sample size of the dataset. The sample size of 80 entrepreneurs within 40 firms presents certain limitations to interpreting results from the regression analyses. Although this sample size is sufficient for power and statistical significance (discussed in Chapter 3), future studies may attempt to replicate these findings across a larger sample of entrepreneurs. Based on the experience of this study, it is a challenging task to conduct personal interviews with multiple cofounders

within the same firm. Entrepreneurs by nature are limited in time and attention for such activities unrelated to the challenges they face in building a new business. On several occasions in this study, one of the cofounders backed out of participating after both cofounders originally agreed to the commitment.

There was a difficult decision made regarding the removal or retention of outliers in the data-set. I discussed this issue in Chapter 4, stating that these cases were actually cases of theoretical interest. However, other data analyses may be more suitable for the dataset. I explored using fsQCA (fuzzy set qualitative comparative analysis), an empirical method that “works robustly with smaller numbers of cases, i.e. between 15 and 60 cases” (Fiss 2011). However, the method is more suitable for theory development and retroductive research. It can be used in a theory testing approach, to investigate complex configurations of factors that influence a dependent variable (i.e. environmental uncertainty), but validity is established from knowledge of each case rather than a statistic. This study didn’t have enough qualitative data to justify using such an approach, however, my future research related to the inner workings of new venture teams will certainly consider such an approach. A researcher may learn more about the dynamics within a NVT through a more qualitative approach. This would reduce the sample size needed and allow for alternative techniques to collect rich, longitudinal data. Cross-sectional designed studies are inherent with issues related to causality and biases.

Future quantitative studies can also address other limitations in this research. First, since the data were collected in Los Angeles, it would be interesting to investigate similarities and differences for the findings across different geographical locations,

industries, stages of partnerships and sizes. There was also a low number of female participants in the sample, and other future studies could investigate gender effects within NVTs. This study showed the possibility of an interaction effect between temporal depth and polychronicity. Future studies can investigate how these two temporal variables may interact with and impact other variables besides environmental hostility. Within entrepreneurship, scholars may investigate relationships with entrepreneurial intentions, opportunity recognition, decision-making, risk preferences and many other topics.

Since no results were found for the hypotheses related to pragmatic motivations and directive leadership, perhaps these constructs could be investigated within a NVT using alternative methods. A comparative study between distinct NVTs formed from pragmatic motivations vs interpersonal ones could help build theory within entrepreneurship. Similarly, leadership styles remain an underexplored topic in entrepreneurship research. Within the context of NVTs, these two constructs may offer scholars a deeper understanding of why certain companies outperform others or simply why some partnerships fail.

It is no secret that entrepreneurship involves a high risk of failure. Whereas, the reasons that a company fails vary based on the situation, 65% of startups fail due to problems within the management team (Gorman & Sahlman, 1989). I hope to continue to research new venture teams within the context of temporal perceptions. My motivation in doing this dissertation was to understand the dynamics within the cofounding team that may lead to future disagreements between the partners. Conflict may lead to progress, however, it is important to understand the source of that conflict. This study is the

beginning of a long journey in investigating the impact that temporal perceptions have on how entrepreneurs perceive their environment and interact with key stakeholders, such as a cofounder, to develop the new venture. It is common to hear the expression that “timing is everything” among the many forms of advice given to entrepreneurs. However, realizing that time is subjective, I hope that through my future research I can continue to learn more about the impact of an entrepreneur’s perception of time.

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CURRICULUM VITA

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EDUCATION

Ph.D Candidate, Entrepreneurship, University of Louisville

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Masters of Business Administration, Loyola Marymount University

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Los Angeles, CA

Concentration: Entrepreneurship & Finance

Bachelor of Business Administration, Western Michigan University

(2004-2006)

Kalamazoo, MI

Haworth College of Business Major: Marketing/Advertising

Michigan State University

East Lansing, MI

Lyman Briggs College (Natural Sciences) (2002)

Telecommunications/Media Arts (2003)

RESEARCH

Interests: New Venture Teams. Perceptions of Time, Allocation of Attention, Entrepreneurial Behavior, Stakeholder Theory, Motivations, Trauma, Pay-What-You-Want Pricing, Power, Board Governance

Dissertation

The Time Frames of New Venture Teams

The purpose of this dissertation is to see if temporal perceptions can factor into how reactive entrepreneurs are to environmental changes and threats within the context of a new venture team.

Committee: Dr. Jim Fiet (Chair)

Dr. Howard Aldrich, Dr. Robert Garrett, Dr. Sharon Kerrick

Accepted Journal Articles

Cumberland, D., Kerrick, D'Mello, J.F., Nonprofit Board Balance and Perceived

Performance, *Nonprofit Management & Leadership*. (Conditionally

Accepted)

Submitted Journal Articles

D'Mello, J.F., Elaydi, R., (Under Review) Regaining Identity After Negative Life

Experiences: Entrepreneurship as Sensemaking Behavior, *under review*

Journal of Management

Barone, M., Bae, T.J., Qian, S., D'Mello, J.F., (Under Review) Power and the

Appeal of the Deal: How Exchange Processes Promote Power Regulation,

under review Journal of Consumer Psychology

Selected Working Papers

Elaydi, R., D'Mello, J.F., Post-Traumatic Growth: An experiential model of

social entrepreneurial motivations *Targeted Journal: Entrepreneurship*

Theory and Practice

D'Mello, J.F., Explaining Conflicts Among Stakeholders in Social Enterprises

Targeted Journal: Strategic Entrepreneurship Journal

D'Mello, J.F., Gray, E., Alnusf, A., Blanco, A., Nurimba, C., Pantaja, A., Reed,

A., Schreiner, T., Simmons, M., Social Entrepreneurs In The Community

Development Sector: A Comparison Of Social Ventures In The United

States, Czech Republic, Germany, Switzerland, And Italy *Targeted*

Journal: Journal of Social Entrepreneurship

Refereed Conference Presentations

D'Mello, J.F., Gray, E., Alnusf, A., Blanco, A., Nurimba, C., Pantaja, A., Reed,

A., Schreiner, T., Simmons, M. (2010), Social Entrepreneurs In The

Community Development Sector: A Comparison Of Social Ventures In

The United States, Czech Republic, Germany, Switzerland, And Italy.

Paper presented at the 7th Annual NYU Stern Conference on Social

Entrepreneurship, New York City, NY.

D'Mello, J.F. (2011) A Stakeholder Theory Approach to Social

Entrepreneurship: Managing Conflict. Paper presented at the 8th Annual

NYU Stern Conference on Social Entrepreneurship, New York City, NY.

D'Mello, J.F., Elaydi, R. (2012), Social Entrepreneurship as a Process and

Outcome for Post-Traumatic Growth: An experiential model of social

entrepreneurial motivations. Presented at the 9th Annual NYU Stern

Conference on Social Entrepreneurship, New York City, NY.

D'Mello, J.F. (2011), Social Entrepreneurs, Social Networks and Stakeholders:

Global vs. Local. Presented at the Facing East Facing West, Kalamazoo,

MI.

D'Mello, J.F. (2011), Prior Knowledge and Discovering Opportunities for Social

Entrepreneurship. Presented at the Ivey PhD Sustainability Academy,

London, Ontario

D'Mello, J.F., Mattingly, E.S., Kushev, T. (2012) Explaining Conflicts Among

Stakeholders in Social Enterprises. Presented at the Babson College Entrepreneurship Research Conference, Fort Worth, TX.

Ma, D., Qian, S., D'Mello, J.F. (2012) Entrepreneurs' Opportunity Discovery Decisions" The Link Between Informational Economics and Resource-dependence Theory. Presented at the Babson College Entrepreneurship Research Conference, Fort Worth, TX.

D'Mello, J.F. (2012) Regaining Identity After Negative Life Experiences: Entrepreneurship as Sensemaking Behavior. Presented at the Annual Meeting of the Academy of Management, Boston, MA.

TEACHING

Overall Teacher Effectiveness – 4.3/5.00

- **Instructor, Principles of Marketing** – MKT 301, University of Louisville (Fall/Spring)
- **Instructor, New Venture Marketing*** – MKT 490, University of Louisville (Fall/Spring)
 - Created new undergraduate elective for College of Business undergraduates
 - In-class pitch competition involving 10 real-life entrepreneurs as judges and extensive peer feedback/voting on winning team.
- **Instructor, Fundraising for Entrepreneurs*** – MBA, University of Louisville (Summer)
 - Created new graduate class in collaboration with Dr. Ted Smith (UofL College of Business Executive-In-Residence and Chief Economic Growth and Innovation at Louisville Metro Government).
 - Course Overview: Applying behavioral economics principles to fundraising within an entrepreneurial context.
- **Advisor, Renewable Energy Engineering Entrepreneurship (Speed School of Engineering)**, University of Louisville 2013-2014
 - Collaborated with Dr. Thad Druffel (Conn Center for Renewable Energy) on entrepreneurship curriculum for a mechanical engineering course developed from a NCIIA grant
 - Flipped classroom approach that utilized a new lab of laser cutters, 3D printers, and other rapid prototyping technologies

Teaching Awards

▪ **2012-2013 Faculty Favorite: An Outstanding Professor Nominated by Students** (University wide).

○ Student testimonial: *“You know it's a pretty rare occasion when I actually anticipate an early morning class, especially one outside of my major. Prior to taking Marketing 301 with Professor D'Mello, I expected the usual, PowerPoints, reading out of the book, just a simple lecture. Contrary to that, we rarely had a focus on that. Jason switched things up, classes were different, even our assessments were different. I honestly can say I learned a lot, and the way I learned it was through applications of the information, rather than being taught the information directly. I honestly wish more teachers in the business school were like him, because I think I'd be a better student and more importantly a better business man in the future.”*

- **PhD Teaching Award 2012-2013**
- **Nominated as Business First “40 under 40” in Louisville, 2014**

SERVICE

Professional Service

- **Ad Hoc Reviewer**
 - *Entrepreneurship Theory and Practice*
 - *Academy of Management (AOM) annual conference*
 - *United States Association for Small Business and Entrepreneurship (USASBE)*
 - *North American Case Research Association (NACRA)*
 - *Routledge Publishing*

University Service

- **Graduate Student Council Representative (2010-2013)**
- **Volunteer Organizer**
 - Cardinal Challenge UofL Business Plan Competition (2011-2013)
 - Walmart Business Plan Competition (2011)
- **Panelist/Judge**
 - Global MBA Business Plan Competition (2013)
 - Students from Hamburger Fern-Hochschule (Germany), Akademie Wuerth Business School (Germany), Perm State National Research University (Russia), and the German Graduate School of Management and Law (Germany).
 - Conn Center for Renewable Energy Research Conference, J.B. Speed School of Engineering

**Community Service
Co-Founder/Organizer**

- **Junior Social Entrepreneurship Summit – Santa Monica (2014)**
 - Led two workshops with a group of 11-16 year old students developing a social business concept plan.
 - Mentored students and helped craft a pitch that was delivered at the end of the program.
- **WaterStep – Hack2o – Louisville & Costa Rica (2014)**
 - Designed a social entrepreneurship program for UofL students in collaboration with WaterStep CEO Mark Hogg, UofL Speed School of Engineering Dr. Thad Druffel, and other partners from GE, FirstBuild, Leadership Louisville and other community stakeholders in Louisville
 - Recruited a team of 6 UofL Engineering students to manage a crowdfunded “hackathon” to develop and implement a new technological solution for improving clean water situations in Costa Rica.
- **Idea Mornings (2011-2013)**
 - Breakfast talk series/community project aimed to spark new ideas to make Louisville better through social entrepreneurship, civic engagement and the arts.
 - Curated/Organized/Hosted over 30 consecutive monthly events for over 2000 total people, including partnership with Louisville’s annual IdeaFestival (www.ideafestival.com)
 - Travelled with the Millennial Trains Project (www.millennialtrain.co) in 2013 on a transcontinental train trip to expand Idea Mornings into 7 new cities during a two week trip after crowd funding \$5,600 online.
 - Kept the event free to the public by obtaining sponsorships from local businesses.
- **RISE – Refugees and Immigrants Succeeding in Entrepreneurship (2012-2013)**
 - RISE is a nonprofit that provides education, financing, and mentorship to refugees and immigrants wishing to start businesses in Louisville.
 - Initiative of Mayor Fischer’s Office of Globalization.

Instructor/Mentor

- **Iraqi Young Leaders Exchange Program for High School Students (IYLEP)**
 - Organized by the World Affairs Council of Kentucky.
 - Lectured and facilitated discussions and pitch competition during a one week workshop on entrepreneurship to

international high school students

- **Jewish Family Career Services (JCFS) – Navigate Enterprise**

- Mentored convicted felon/veteran going through their microloan program. Helped write a business plan and acquire small seed capital for a startup social enterprise to provide housing for homeless veterans.

Other Volunteer Services

- **Mayor Greg Fischer’s “Give a Day”**

- Measured performance outcomes for 2012/2013 Mayor’s Week of Service (Over 150,000 volunteers in Louisville the week before the KY Derby).

- **Restorative Justice Louisville**

- Nonprofit that uses restorative justice practices (Family group counseling) to keep non-violent youth offenders out of the juvenile justice system.

- **Forecastle Music/Arts/Activism Festival**

- Conducting an Economic Impact Study for annual music festival (over 75k attendees) in Louisville.

- **Coach** - DuPont Manual High School’s “Idea Festival”

(2011)

DOCTORAL TRAINING

Theoretical Training

Contemporary Entrepreneurship
Entrepreneurship from an Economics Perspective
Finance Theories
Microeconomics & Economic Modeling
New product Strategies/Marketing
Psychology & Cognition in Entrepreneurship Research
Organizational Behavior Theories
Quantitative Entrepreneurship
Sociology & Evolutionary Theories
Strategy & Business Policy Theories
Strategy & Organizational Theories
Venture Capital Theories

Scott Shane
Simon Parker
David Dubofsky
Yong Chao
Robert Carter
Dean Shepherd
Sherry Thatcher
Per Davidsson
Howard Aldrich
Jay Barney
Melissa Baucus
James Fiet

Methodological Training

Advanced Multivariate Statistics
Conjoint Analysis & Discrete Choice
Experimental Design
Research Methods
Hierarchical Linear Modeling
Structural Equation Modeling
Qualitative Methods

Joseph Petrosko
Robert Carter
Michael Barone
Manju Ahuja
Jill Adelson
Jill Adelson
Bradley Carpenter

4th ARCS PhD Sustainability Academy (2011) – Ivey School of Business, University of Western Ontario

- Week-long intensive research and teaching program themed “Passion and Compassion for Sustainability”
- Interactive paper development workshop led by Oana Branzei, Melissa Cardon, Jane Dutton, Michael Pratt, Chris Steyaert.
- Living Case Study visits and a seminars for Ivey Case Publishing/Writing/Teaching

PROFESSIONAL EXPERIENCE

Visiting Professor, Loyola Marymount University (Los Angeles, CA)

- Teaching two sections of Introduction to Entrepreneurship - ENTR 3310 (2014)
- Introducing a new course – New Venture Marketing – in the spring.

Co-Founder, AMPED-Academy of Music Production & Education (Louisville, KY)

- Social venture in partnership with Level Seven Recording Studios for at-risk youth to compose, record, perform, and market music (2014 – current)
- Raised over \$15k through crowdfunding and sponsorships and over \$200k of in-kind donations of equipment and instruments.
- Organized over 20 volunteers of local musicians, artists, educators, and others to build a summer program and ongoing afterschool program with free food and transportation.
- Built and exhibited a “mobile record studio booth” at the 2014 Idea Festival with local maker community (LVL1 Hackerspace, GE FirstBuild, Maker Mobile).
- The booth will be rented throughout the year to earn income for AMPED, which also receives profits from Level Seven and income from production of “AMPED UP!” web series produced by AMPED kids (age 11-17).
- Featured AMPED artists have included Grammy award nominee Janelle Monáe and the legendary Preservation Hall Jazz Band in the AMPED studio.

Research Assistant - The Founders Distillery – Ewing Marion Kauffman Foundation (July 2013)

- Collaborated with Dr. Ted Smith as a researcher to examine the role of OP development during new venture formation.
- Responsible for recruiting and interviewing 8 startup teams, a law firm, and angel investors for a 1 day workshop.
- Co-authored Kauffman whitepaper/produced video describing program design/outcomes/next steps based on user feedback

Co-Founder, CEO – TheWedLink by Cleland D’Mello LLC. (Detroit, MI)

- Raised seed capital and launched online/mobile startup in the wedding

industry (2007-2010).

- Relocated to Hyderabad, India (4 months) to manage offshore technology team.
- Provided mobile search platform for 8,000 bridal couples searching for wedding vendors.

MBA Consultant/Analyst – Ranker.com (Los Angeles, CA)

- Worked with serial entrepreneur in a variety of roles to launch social media website (2009).
- Ranker.com is currently funded with \$5.1 million, hosting 8 million monthly visitors (as of July 2013)
- SEO implementation/product enhancement.

Marketing Manager – Guitar Salon International (Los Angeles, CA)

- Launched a new website for the world's leading dealer of classical and flamenco guitars (2008).
- Managed photography/graphic design/merchandising for instruments valued from \$10k - \$100k.
- Created SEO campaign to improve Google search results for several search terms.

Marketing Analyst – Walmart.com (San Francisco, CA)

- Launched Walmart Online Photo-Center and Video Downloads site in partnership with Snapfish and Hewlett-Packard (HP).
- Designed a content management software tool for both websites.
- Coordinated multiple marketing campaigns with Coke, Pepsi, P&G, Samsung etc.
- Reported web analytics and business metrics weekly to executive management.

Other Past Experience

- | | |
|---|--|
| ▪ Volunteer Mentor/Coach – Upwardly Global and NFTE | ▪ Graphic Designer – Western Herald Newspaper |
| ▪ Video Editor – CBS.com - The Amazing Race's Elimination Station | ▪ Summer Intern, Organic, Inc. (Interactive Advertising Agency for Chrysler) |
| ▪ Private Tutor/Guitar instructor | ▪ Research Assistant, Michigan State University Department of Marketing |
| ▪ Studio musician/performing artist (bass guitar/lead guitar) | ▪ New York Film Academy |
| ▪ Marketing Research Assistant – RPA Process Technologies | ▪ Dean's Student Advisory Board – Haworth College of Business |
| ▪ Intern – Walt Disney Internet Group (London, UK) | |